

SENEY

NARRATIVE REPORT

JANUARY-DECEMBER 1964

Division of Wildlife Refuges

Narrative Report Routing Slip

Refuge SENEY Year 1964

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SENEY NATIONAL WILDLIFE REFUGE



Canada goose flock at refuge headquarters.

SOME SIXTY YEARS AGO the forests of Michigan's Upper Peninsula echoed to the ring of the lumberman's axe. Today, in part of this area, a different sound is heard—the wild sweet music of Canada geese that have been induced to nest on Seney National Wildlife Refuge. Of all the wildlife-management practices put into effect at Seney, getting Canada geese to nest on an area where none had nested before is perhaps the greatest achievement.

Seney National Wildlife Refuge was established in 1935 for the protection and production of waterfowl and other desirable wildlife species. The refuge is in the great Manistique swamp, and most of it is open marsh with immense areas of rushes and sedges. Here and there in the vast expanse of marsh are shallow pools of clear, cold water and sandy knolls and ridges that support stands of old Norway pines—survivors from the days

when Michigan led the Nation in lumber production. The great timber-cutting period began about 1870, and by 1890 the Upper Peninsula was practically stripped of its forests.

Often fires were deliberately set to clear away the wreckage of past lumbering operations and to make way for new ones. These uncontrolled fires burned the humus down to the sandy substratum and killed the seeds that would have produced a new forest. After the fires burned out, but before nature could restore the area, Seney was exploited by a land-development company that drained acre after acre of soil unsuited to agriculture. The reclaimed acreage was sold through extravagant promises of its productivity, but the buyer-farmers soon learned that crops of sufficient size to provide a livelihood could not be grown. One by one they quit the area, and the worthless lands reverted to the State for taxes.



UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE

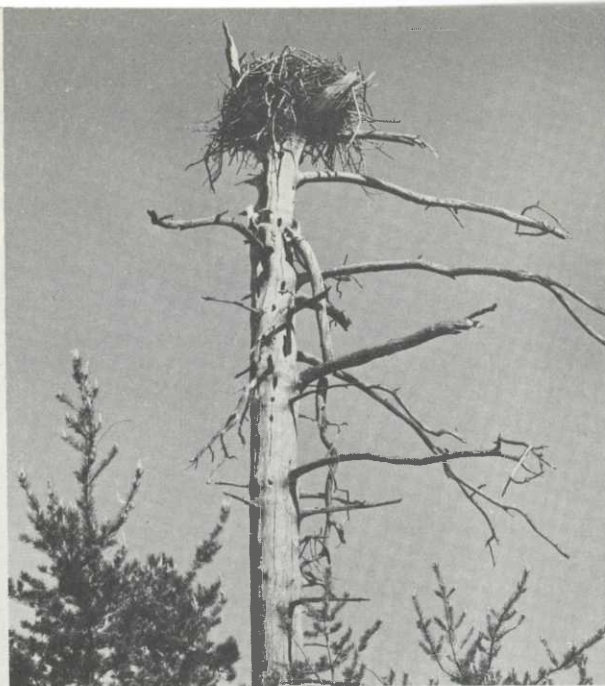


In 1934 the Michigan Conservation Department recommended to the Federal Government that the Seney area be taken over for wildlife development, and the recommendation was acted upon. The physical development of Seney's 95,531 acres, near the upper end of the Mississippi Flyway, included the moving of thousands upon thousands of yards of sand and peat to build an intricate system of dams, dikes, and ditches designed to divert and impound water. Truck trails, many of them on the dikes, were put in, so that a rapid inspection of the refuge, particularly of the water controls, is possible. Desirable food plants, like wild celery and rice, were established by planting and seeding the margins of channels and pools. Although some of the construction work was done by contractors, most of it was done by emergency agencies set up to relieve unemployment in the 1930's.

The response of wildlife to habitat restoration at Seney has been better than was hoped for. The success of the Canada goose as a nesting species is a fine example of this response. In January 1936, Henry Wallace, a resident of Detroit, gave the refuge a flock of 300 captive-bred Canada geese. The pinioned birds were put in a goose pasture of 400 acres, and the best nesting conditions possible were provided through control of water levels and habitat. Goslings reared by this breeding flock took off in the fall for southern wintering grounds, just as goslings reared in the wild do.

These first Seney-reared birds returned the following spring and, in subsequent years, bred, nested, and reared goslings of their own. This cycle continued so that by 1944 the Canada goose was definitely established as a nesting species, and

Nature trails have family appeal.

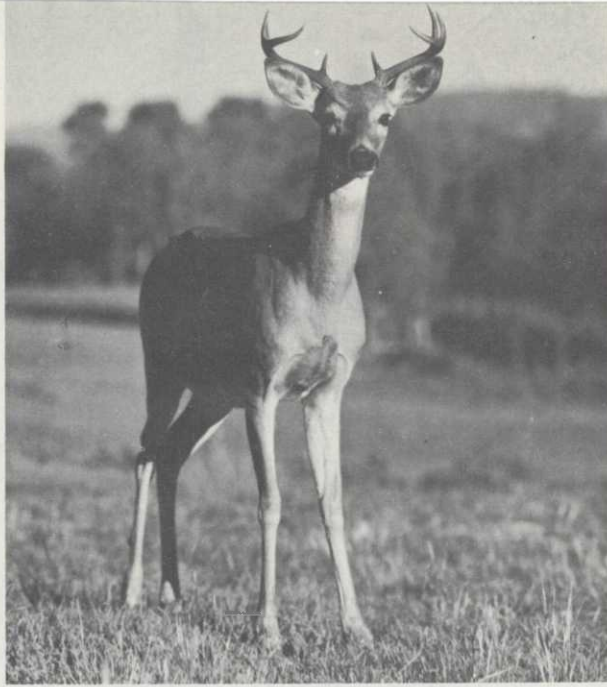


Bald eagle nest.

by 1954 there were 2,800 of the black-necked, white-cheeked birds using the pools, islands, and foods of the refuge. Seney geese act as decoys attracting migrant flocks, so that in the fall when Canadian birds wing down from their breeding grounds, they put in at the refuge and add their honking to that of the birds already there. As mornings grow colder and the pools begin to ice over, migrants and decoys begin to take off, until finally there are no more wedges of geese flying over the Norway pines and into the gray skies.

Geese—Canadas, snows, and blues—are not the only migratory waterfowl that have been attracted to Seney. The refuge is well within the nesting range of several species of ducks, with the black duck the most prolific nester, popping out of seepage pools and beaver ponds at every turn. The mallard is a close second, and is followed by both the common and the hooded merganser. Other ducks that nest at Seney in lesser numbers are baldpates, ring-necks, blue-winged teals, wood ducks, and goldeneyes.

The shallow waters of the pools, liked by the geese and ducks and other marsh and water birds, range from 1 to 6 feet in depth. Cold and clear, with occasional snags and some submerged brush, these pools are exactly what the savage northern pike likes in the way of habitat, and though there are plenty of perch, bullheads, and sunfish, most fishermen who come to Seney cast for pike, from the dikes or from the edges of the pools. Public fishing on the larger pools begins July 1, after the waterfowl nesting season, and runs through the Labor Day weekend. Smaller pools, just north of the headquarters entrance, are open to the public



White-tailed deer.

for fishing at all times in accordance with State regulations, and there are shelters, tables, and stone fireplaces for the convenience of those fishing this section or anyone else who wants to use them.

Fishing is not the only public use permitted at Seney for sportsmen. During the last half of November and after the waterfowl have left, most of the refuge is open to deer hunting in accordance with State regulations. During the season the western half of the area is open for camping parties.

For nature lovers of any kind, but particularly those interested in birds, Seney's 200-odd species, including the migratory waterfowl of course, offer a wide variety for study. Conducted nature tours during the summer provide opportunities to see some of the better parts of the area and some of the many birds and a few of the mammals. Special arrangements can be made for organized groups. The daily tour is a 10-mile drive through Unit I over winding roads that skirt first one bracken-edged pool and then another; another possibility is a walking trip of $1\frac{1}{2}$ miles over a nature trail that begins and ends at refuge headquarters.

Plants of particular interest include sweetfern, Labrador-tea, wintergreen, and bracken. One of the lichen family on the refuge is the British-soldier, a minute growth with a bright red cap. There are many other plants typical of a marsh, and many that are common to higher ground, of which the refuge has about 3,000 acres. And there are three natural areas, set aside so that indigenous vegetative types can be studied under conditions as nearly natural as possible. These study areas include about a hundred acres of Norway pine in

the south section, fifty acres of hemlock in the northeast section, and about four hundred acres of hardwoods.

Beaver or their workings may be seen, while other fur animals on the refuge are mink, muskrat, otter, coyote, fox, raccoon, skunk, weasel, bobcat, and wolf. Trapping is carried on as necessary, to keep these animals within the carrying capacity of the refuge, and permittees are given exclusive trapping rights on designated trapping units. Refuge receipts from trapping and other supervised economic uses, including timber removal, reach a substantial amount each year. Twenty-five percent of these receipts are returned by the Treasurer of the United States to Schoolcraft County in lieu of taxes for the maintenance of schools and roads—revenue the county would never have realized if a refuge had not been established there. So the transformation of some 96,000 acres of marsh from a barren, drained scar to a fertile, productive area is conservation in action at its best.

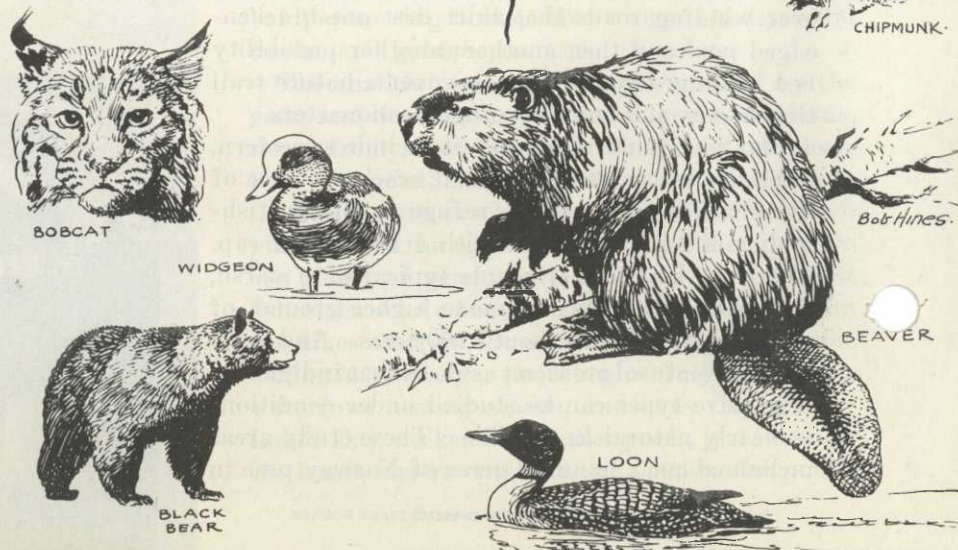
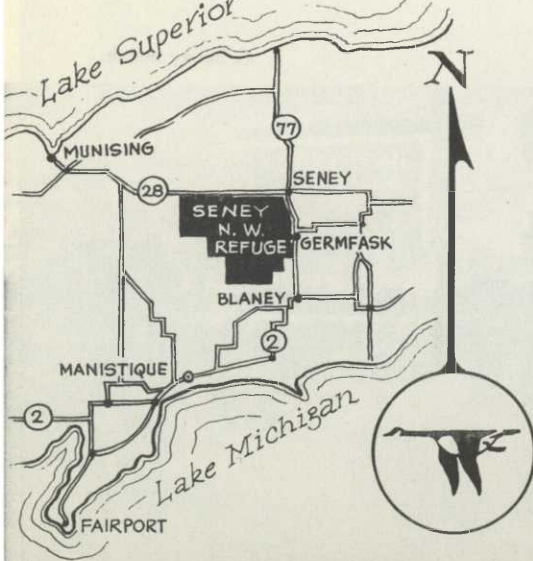
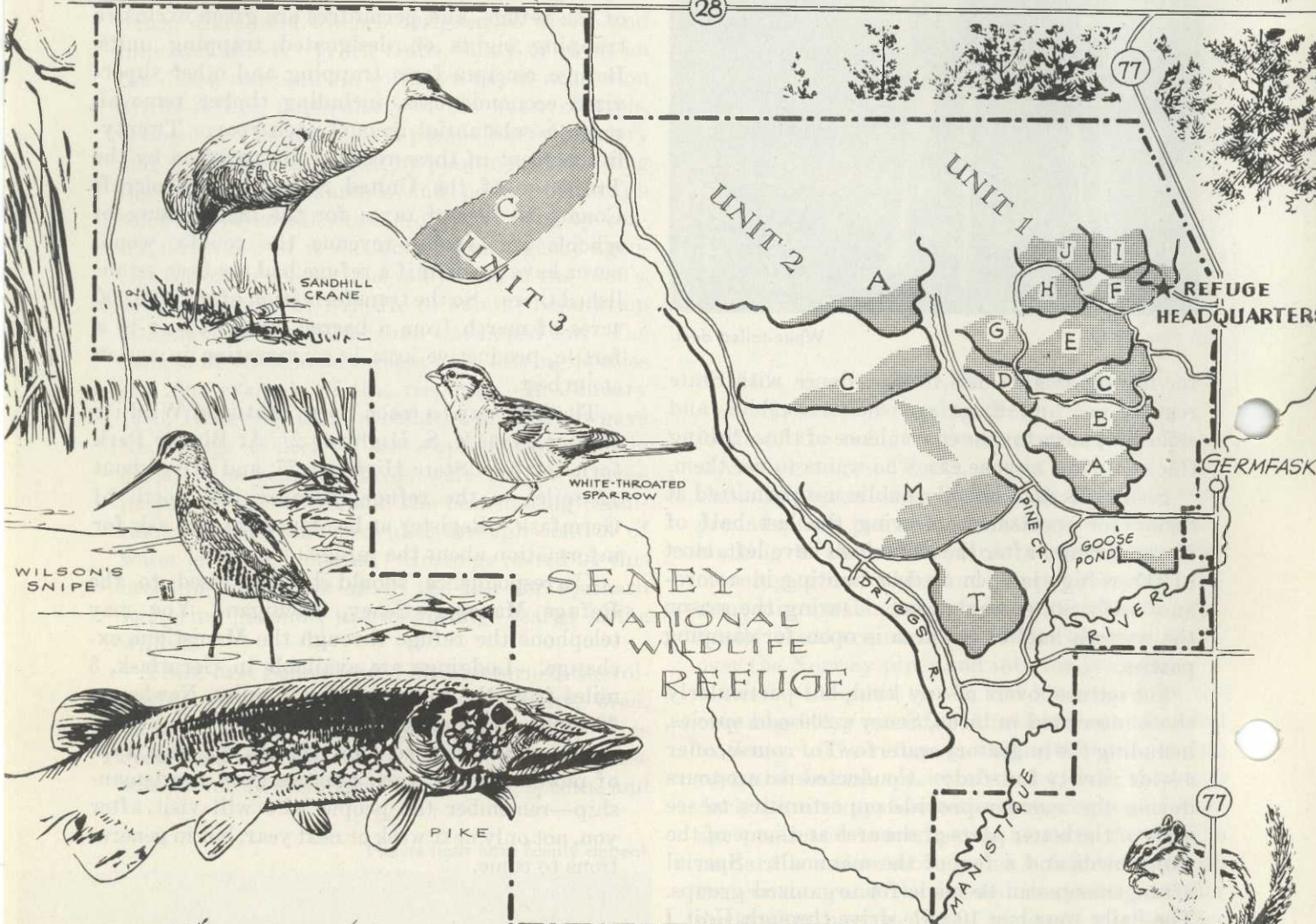
The best way to reach Seney National Wildlife Refuge, is on U. S. Highway 2. At Blaney Park turn north on State Highway 77, and drive about 12 miles to the refuge entrance just north of Germfask. Register at headquarters and ask for information about the refuge.

Correspondence should be addressed to the Refuge Manager, Seney, Michigan. You may telephone the refuge through the Manistique exchange. Lodgings are available in Germfask, 3 miles from the refuge, Seney, 5 miles, Newberry, 30 miles, and Manistique, 35 miles.

On your visit to this refuge, or any type of public outdoor area, practice good sportsmanship—remember the people who will visit after you, not only next week or next year, but in generations to come.

A Seney marsh.







BIRDS OF THE SENEY NATIONAL WILDLIFE REFUGE



The Seney National Wildlife Refuge, established in 1935, is a unit in the Mississippi Flyway extending from Canada to the Gulf. This 96,000-acre tract is in the northwoods of Michigan's Upper Peninsula, and is an outstanding example of wildlife habitat rehabilitation. It is administered by the Bureau of Sport Fisheries and Wildlife, U. S. Fish and Wildlife Service, in the Department of the Interior.

More than half of the area is marshy in character, with about 7,000 surface acres of water impounded in 20 man-made pools by a network of dikes, plus numerous natural and beaver-made ponds. The soils are extremely poor, consisting for the most part of sand and peat. First devastated by the lumberman's axe, and then by the terrible fires that follow, and the land has since been best adapted for wildlife and recreational uses.

During the summer this refuge is home for a wide variety of interesting wildlife. On a spring morning the air fairly rings with the calls of Canada geese, sandhill cranes, and common loons. A number of ducks nest on the area, with the black duck, mallard, hooded and common mergansers, ring-necked duck, American widgeon, blue-winged teal, wood duck, and common goldeneye being found in approximately that order. Other attractions are three species of grouse, the bald eagle, and many smaller birds including the Le Conte's sparrow.

Establishment of the Canada goose as a nesting species on this refuge began in 1936 with the gift of 308 pinioned birds. A 400-acre fenced goose pasture was provided and the best nesting conditions possible were established through control of water levels and habitat. The goslings reared by this flock were allowed full freedom and it was but a short time before they were flying south in the fall. They now return to the Seney Marshes each spring, nesting throughout the refuge.

While only a part of the refuge is accessible, it is possible to drive over some of the roads built on the dikes. Information on the best areas and directions for reaching them may be secured at the refuge headquarters.

The following bird list contains 199 species which represent observations since 1935. Another 27 species, which are rare or have occurred accidentally, have been added on the last page. This list, using species names, is in accordance with the Fifth (1957) A.O.U. Check-List. The status and abundance symbols are defined as follows:

<u>Status</u>	<u>Abundance</u>
Column 1 - S - March-May	a - abundant
2 - S - June-August	c - common
3 - F - September-November	u - uncommon
4 - W - December-February	o - occasional
	r - rare

	<u>S</u> <u>S</u> <u>F</u> <u>W</u>		<u>S</u> <u>S</u> <u>F</u> <u>W</u>
Common Loon	c c u	Yellow Rail	u u u
Red-necked Grebe	r r r	American Coot	u u c
Horned Grebe	o r u	Semipalmated Plover	u u u
Pied-billed Grebe	c u c	Killdeer	c c c
Double-crested Cormorant	r r r	Black-bellied Plover	o o o
Great Blue Heron	c c c	American Woodcock	c c c
Black-crowned Night Heron	r r	Common Snipe	c c c
Least Bittern	r r	Upland Plover	o o o
American Bittern	c c c	Spotted Sandpiper	c c c
Whistling Swan	u r u	Solitary Sandpiper	c c c
Canada Goose	c c c u	Greater Yellowlegs	c c c
Snow Goose	o u	Lesser Yellowlegs	c u c
Blue Goose	o u	Pectoral Sandpiper	u u u
Mallard	c c c o	Least Sandpiper	u u u
Black Duck	c c c o	Dunlin	u u u
Gadwall	r r	Semipalmated Sandpiper	u u u
Pintail	u r o	Herring Gull	c u c
Green-winged Teal	u o u	Ring-billed Gull	c u c
Blue-winged Teal	c u c	Bonaparte's Gull	o o
American Widgeon	c u c	Common Tern	c c c
Shoveler	o r o	Caspian Tern	o o o
Wood Duck	c c c	Black Tern	o c o
Redhead	o r u	Mourning Dove	o o o
Ring-necked Duck	c c c	Black-billed Cuckoo	c c c
Canvasback	u r u	Great Horned Owl	c c c c
Lesser Scaup	u r u	Snowy Owl	o o o
Common Goldeneye	c o c o	Barred Owl	r r r r
Bufflehead	c r c	Long-eared Owl	o o o
Ruddy Duck	r r r	Whip-poor-will	u u
Hooded Merganser	c c c	Common Nighthawk	c c c
Common Merganser	c c c o	Chimney Swift	c c
Goshawk	o o o o	Ruby-throated Hummingbird	o
Sharp-shinned Hawk	o o o	Belted Kingfisher	c c c
Cooper's Hawk	o o o	Yellow-shafted Flicker	c c c r
Red-tailed Hawk	o o o	Pileated Woodpecker	o o o o
Broad-winged Hawk	u u u	Red-headed Woodpecker	r r r
Rough-legged Hawk	u u	Yellow-bellied Sapsucker	u u u
Golden Eagle	r	Hairy Woodpecker	c c c c
Bald Eagle	u u u o	Downy Woodpecker	c c c c
Marsh Hawk	c c c	Black-backed Three-toed	
Osprey	u u u	Woodpecker	r r r r
Peregrine Falcon	r r r	Eastern Kingbird	c c
Pigeon Hawk	o o o	Great Crested Flycatcher	o o
Sparrow Hawk	c c c	Eastern Phoebe	c c c
Spruce Grouse	u u u u	Yellow-bellied Flycatcher	o o
Ruffed Grouse	c c c c	Traill's Flycatcher	c c
Sharp-tailed Grouse	c c c c	Least Flycatcher	c c
Sandhill Crane	c c c	Eastern Wood Pewee	c c
Virginia Rail	u c u	Olive-sided Flycatcher	u u
Sora	u c u	Horned Lark	u o c

	<u>S</u> <u>S</u> <u>F</u> <u>W</u>		<u>S</u> <u>S</u> <u>F</u> <u>W</u>
Tree Swallow	a a c	Chestnut-sided Warbler	c c c
Bank Swallow	c c c	Bay-breasted Warbler	c c
Rough-winged Swallow	u u u	Blackpoll Warbler	c c
Barn Swallow	c c c	Pine Warbler	c c c
Cliff Swallow	u u u	Palm Warbler	c u c
Purple Martin	u u o	Ovenbird	c c c
Gray Jay	o o o o	Northern Waterthrush	c u c
Blue Jay	u u c u	Connecticut Warbler	o r o
Common Raven	c c c c	Mourning Warbler	u u u
Common Crow	c c c	Yellowthroat	c c c
Black-capped Chickadee	a a a a	Wilson's Warbler	u u
Boreal Chickadee	u u u u	Canada Warbler	c u c
White-breasted Nuthatch	o o u u	American Redstart	c u c
Red-breasted Nuthatch	c c c c	House Sparrow	u u u u
Brown Creeper	u u u o	Bobolink	c u
House Wren	u u u	Eastern Meadowlark	c o
Winter Wren	o o o	Redwinged Blackbird	a a a
Long-billed Marsh Wren	u u u	Baltimore Oriole	u u
Short-billed Marsh Wren	a a a	Rusty Blackbird	c c
Mockingbird	r r	Brewer's Blackbird	u u
Catbird	o o o	Common Grackle	a a a
Brown Thrasher	c c c	Brown-headed Cowbird	a a c
Robin	c c c	Scarlet Tanager	o c o
Wood Thrush	u u u	Rose-breasted Grosbeak	c c u
Hermit Thrush	c c c	Indigo Bunting	o o
Swainson's Thrush	c c c	Evening Grosbeak	u u u c
Veery	u u u	Purple Finch	c c c
Eastern Bluebird	c c c	Pine Grosbeak	u r u c
Golden-crowned Kinglet	c c c c	Common Redpoll	a a a
Ruby-crowned Kinglet	u o u	Pine Siskin	c r c a
Water Pipit	u c	American Goldfinch	u u u c
Bohemian Waxwing	o o u	Red Crossbill	u u o c
Cedar Waxwing	c a a	White-winged Crossbill	o o r c
Northern Shrike	o o o	Rufous-sided Towhee	o o o
Loggerhead Shrike	r r r	Savannah Sparrow	c c c
Starling	a a a c	Le Conte's Sparrow	r
Solitary Vireo	u u	Vesper Sparrow	c c c
Red-eyed Vireo	a a a	Slate-colored Junco	a c a o
Warbling Vireo	r r	Tree Sparrow	c c r
Black-and-White Warbler	c c c	Chipping Sparrow	c c c
Tennessee Warbler	c r c	Clay-colored Sparrow	o o
Nashville Warbler	a a a	Harris' Sparrow	r
Parula Warbler	u u u	White-crowned Sparrow	c c
Yellow Warbler	c c c	White-throated Sparrow	c c c
Magnolia Warbler	c c c	Fox Sparrow	
Cape May Warbler	c c	Lincoln's Sparrow	u u u
Black-throated Blue Warbler	u u u	Swamp Sparrow	a a a
Myrtle Warbler	a a a	Song Sparrow	a a a r
Black-throated Green Warbler	c c c	Lapland Longspur	o o r
Blackburnian Warbler	u u u	Snow Bunting	c c a

The following 27 species are of accidental or very rare occurrence. Some have been reported regularly in the past, but not observed in recent years. Station observation data is included.

	<u>Observations</u>	<u>Dates</u>
White Pelican	4	June-August 1944
Common Egret	2	8-3-43 and 7-30-49
Green Heron	2	5-6-49 and 7-7-60
White-fronted Goose	2	Spring 1938
Red-breasted Siberian Goose	1	4-18-51
Brant	2	Fall 1937
European Widgeon	2	6-12-46 and 5-4 to 5-17-48
Barrow's Goldeneye	2	4-18-37
Oldsquaw	1	3-16-50
White-winged Scoter	7	April-May 1961
Red-breasted Merganser	8	3-25-38 and 8-4 to 8-11-43
Turkey Vulture	1	4-23-40
Golden Eagle	1	October-November 1950
Greater Prairie Chicken		1935-1952 (*)
King Rail	4	Fall 1935, 1939, 1940, and 7-30-49
Willet	3	10-15-36 and 8-3-55
Short-billed Dowitcher	1	8-5-43
Baird's Sandpiper	3	10-12-36 and 8-26-58
Stilt Sandpiper	1	8-4-43
Marbled Godwit	1	5-18-55
Northern Phalarope	2	9-9-43 and 8-26-58
Screech Owl		Resident in 1936
Hawk-Owl		Winter resident in 1936
Short-eared Owl	1	5-6-37
Saw-whet Owl	3	9-11 to 9-30-39 and 11-10-52
Western Kingbird	1	8-24-53
Loggerhead Shrike	1	5-8-37

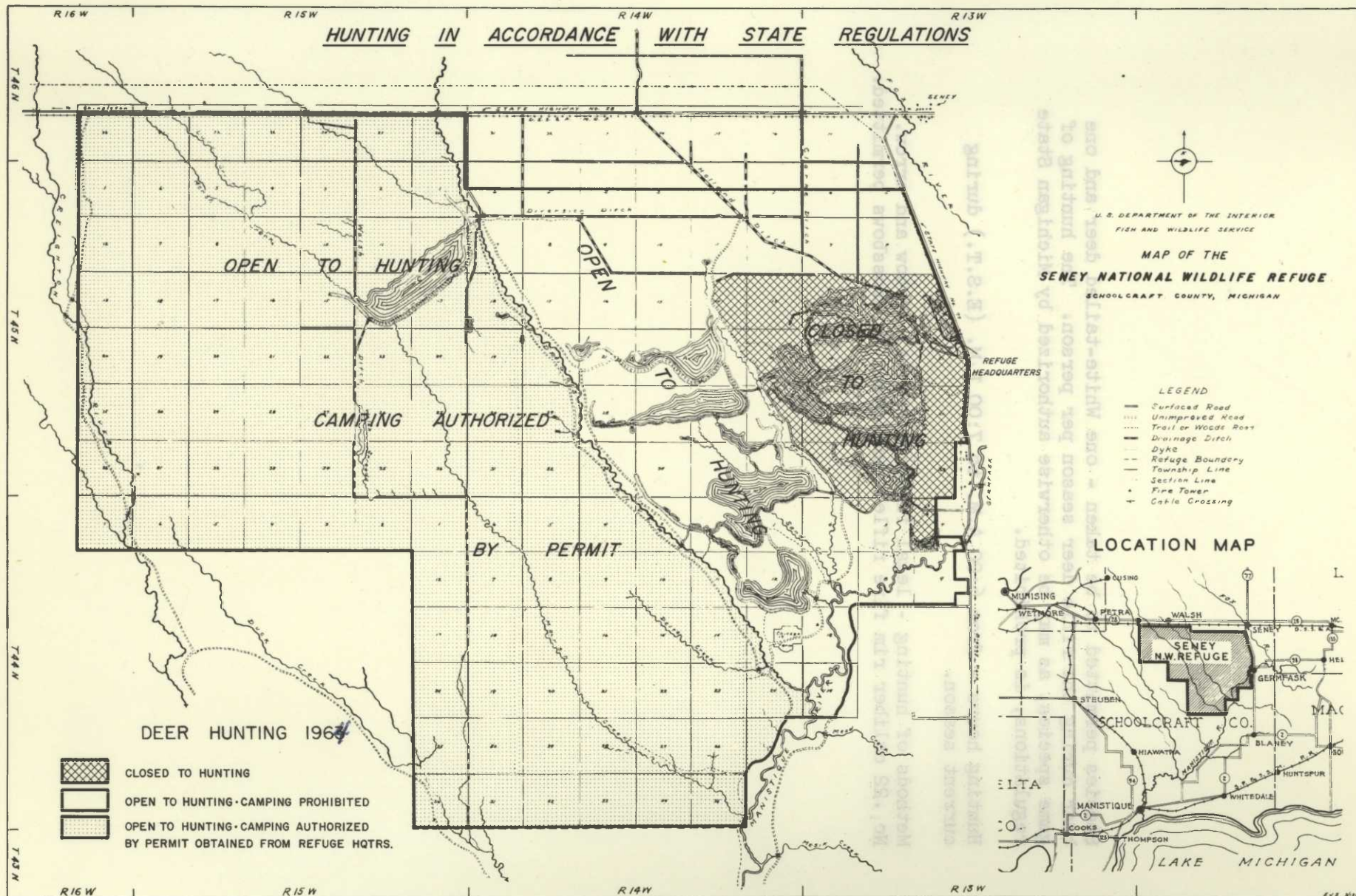
(*) Occurred from 1935 to 1952; last observation was 12-12-52.
None known to exist in Upper Peninsula today.

RL-118-R-2

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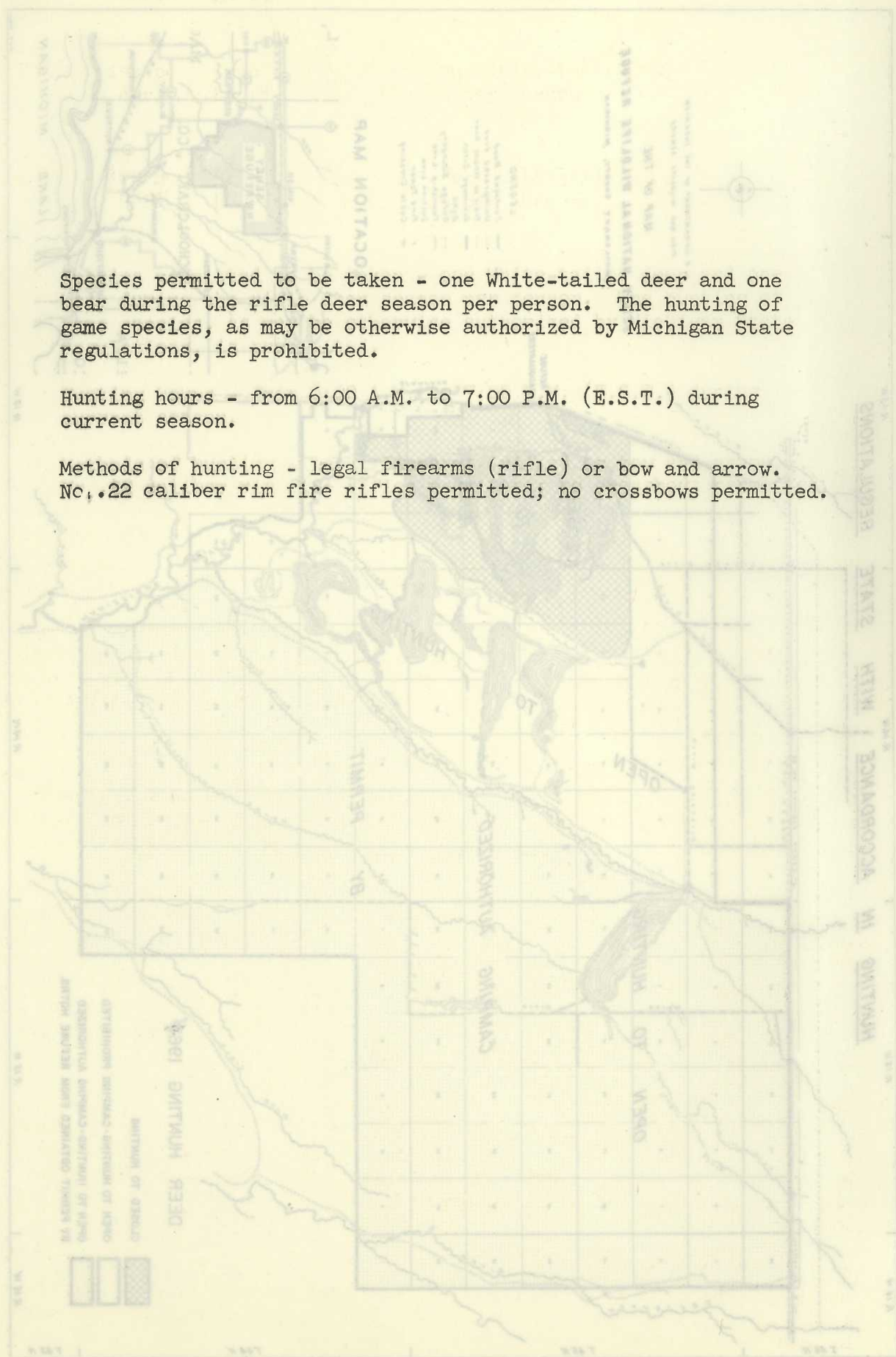
U. S. Fish and Wildlife Service
Department of the Interior 100308



Species permitted to be taken - one White-tailed deer and one bear during the rifle deer season per person. The hunting of game species, as may be otherwise authorized by Michigan State regulations, is prohibited.

Hunting hours - from 6:00 A.M. to 7:00 P.M. (E.S.T.) during current season.

Methods of hunting - legal firearms (rifle) or bow and arrow. No, .22 caliber rim fire rifles permitted; no crossbows permitted.



PUBLIC RECREATION FACILITIES AND REGULATIONS
Seney National Wildlife Refuge
Seney, Michigan

The refuge Headquarters' entrance is located on Highway M-77 approximately 5 miles south of Seney, Michigan and about 2 miles north of Germfask, Michigan. There is no charge for the use of the refuge facilities.

GUIDED AUTO TOUR

Conducted auto tours leave Refuge Headquarters at 6:00 PM, daily, seven days per week, June 15 through Labor Day. Travel will be in your own automobile. Be sure to have at least one-quarter tank of gasoline. This tour winds through the pine ridges and water impoundments of Unit I and usually lasts about one and a half hours. Wild ducks, geese, deer and other wildlife are usually seen.

SELF-GUIDED AUTO TOUR

This route is open to the public from 8:00 AM to 3:30 PM, June 15 through October 1. A free-use permit is required, which may be obtained at Refuge Headquarters. Birds, ducks, geese, deer and small animals may be seen along this 8 mile scenic drive. Travel is by your own automobile. You should have at least one-quarter tank of gasoline. The tour will take from one to two hours. Informational signs are posted at places of special interest along the route.

NATURE TRAIL

The Nature Trail is open at all times during daylight hours and is a one and one-quarter mile walk around one of the smaller pools. Depending on the season and time of day, wild ducks, geese and other species of wildlife may be seen. Benches are located at intervals along the path. Information signs are posted at points of special interest.

TOWER

From the Headquarters' tower one can view much of the area and its development. Several species of wildlife may usually be seen in their undisturbed environment. Children are not allowed to climb the tower unless accompanied by adults.

PICNICKING

There are three picnic sites on the refuge. The "Wigwam" recreational area is one-half mile north of Headquarters on Highway M-77. The Driggs Road area is 8 miles west of Seney at the junction of Highway M-28 and the Driggs River Road. The C-3 fishing and picnic area is 2 miles south of M-28 on the Driggs Road. The latter area is open to public use after July 1. The other two areas are open during the normal picnic season. Tables, fireplaces, water pumps and toilets are available. Overnight camping is prohibited.

FISHING

Two trout streams, the Driggs and Walsh, are open in accordance with State laws and as posted. Fishing is permitted in the two Show Pools in accordance with State laws and in C-3 Pool from July 1 through Labor Day. The Manistique River flowing through the refuge is also open to fishing in accordance with State laws. Minnows may be used for bait only in the Manistique River.

BOATING, DOGS, HUNTING, CAMPING

No boating is permitted on the refuge at any time, except on the Manistique River. Dogs must be kept on a leash. Hunting and camping are permitted only during the rifle deer season in specifically designated areas.

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ANNUAL NARRATIVE REPORT

1964

UNITED STATES DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE

BUREAU OF SPORT FISHERIES AND WILDLIFE

SENEY, MICHIGAN

SENEY NATIONAL WILDLIFE REFUGE

PERSONNEL

Refuge Manager John B. Hakala
Wildlife Biologist (Ass't Manager) Peter S. Suich *
Refuge Manager Trainee Orlynn J. Halladay **
Wildlife Biologist Glen A. Sherwood
Refuge Clerk Omer L. Doran
Mechanic George Orlich
Maintenance Man William G. Anderson
Maintenance Man Glen C. Losey ***
Wildlife Aid Orlynn J. Halladay ****
Wildlife Aid David E. Goeke *****
Wildlife Aid (Patuxent) David L. Rintamaa *****)

* * * * *

* Transferred to Lake Andes Refuge, South Dakota on 7/1/64
** E.O.D. 9/13/64
*** E.O.D. 4/7/64
**** E.O.D. 6/1/64 -- Terminated 9/13/64
***** E.O.D. 6/16/64 -- Terminated 9/7/64
***** E.O.D. 6/19/64 -- Terminated 9/11/64

SENEY NATIONAL WILDLIFE REFUGE

TEMPORARY PERSONNEL

Charles Burton	Seasonal Laborer
Michael J. Collins	Seasonal Laborer
Leo D. Lawrence	Seasonal Laborer
Herbert E. Musselman	Seasonal Laborer
Marion J. Schrock	Seasonal Laborer

* * * * *

ACCELERATED PUBLIC WORKS PROGRAM -- 1/23 - 1/31/64

Wilbert J. Beloungea	Laborer
Elmer L. Burns	Laborer
Charles Burton	Laborer
Harry L. Burton	Laborer
William T. Burton	Laborer
Michael J. Collins	Laborer
Curtis L. Cuthbertson	Laborer
Lloyd Fitzpatrick	Laborer
Paul E. Ketola	Laborer
Reino W. Kohvakka	Laborer
Glen C. Losey	Foreman I, Laborer
Kenneth Lytle	Laborer
Glenn D. McGahan	Laborer
Eugene H. Nessler	Laborer
Harold J. Rupright	Laborer
Marion J. Schrock	Laborer
Melvin V. Smart	Laborer
Andrew E. Swisher	Laborer
Raymound J. Tuttle	Laborer

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1964

I. GENERAL

A. Weather Conditions

	<u>Snowfall</u>	<u>Precipitation</u>		<u>Max.</u>	<u>Min.</u>
		<u>This Month</u>	<u>Normal</u>	<u>Temp.</u>	<u>Temp.</u>
January	<u>27.0</u>	<u>1.54</u>	<u>2.19</u>	<u>42</u>	<u>-26</u>
February	<u>20.5</u>	<u>1.25</u>	<u>1.89</u>	<u>46</u>	<u>-15</u>
March	<u>22.0</u>	<u>1.72</u>	<u>2.08</u>	<u>46</u>	<u>- 1</u>
April	<u>2.5</u>	<u>2.97</u>	<u>2.14</u>	<u>66</u>	<u>0</u>
May	<u> </u>	<u>3.68</u>	<u>2.62</u>	<u>80</u>	<u>31</u>
June	<u> </u>	<u>2.72</u>	<u>3.69</u>	<u>92</u>	<u>29</u>
July	<u> </u>	<u>3.71</u>	<u>2.80</u>	<u>90</u>	<u>40</u>
August	<u> </u>	<u>3.89</u>	<u>3.06</u>	<u>83</u>	<u>38</u>
September	<u> </u>	<u>3.50</u>	<u>3.14</u>	<u>78</u>	<u>29</u>
October	<u>2.0</u>	<u>2.18</u>	<u>2.47</u>	<u>72</u>	<u>23</u>
November	<u>23.0</u>	<u>3.02</u>	<u>3.12</u>	<u>62</u>	<u>3</u>
December	<u>44.5</u>	<u>2.21</u>	<u>2.65</u>	<u>40</u>	<u>-14</u>
TOTALS	<u>141.5</u>	<u>32.39</u>	<u>31.85</u>	<u>EXTREMES</u>	<u>92</u>
					<u>-26</u>

The weather data listed on page 1 were collected from daily weather observations at the official weather station located at refuge headquarters.

January: The first 11 days were abnormally warm with daily temperatures ranging from 27 to 42 degrees. On the 12th the temperature dropped to a -26 degrees and on the 13th a -2 degrees reading was recorded. These were the only days of sub-zero readings during the month. The -26 was also our coldest reading for the year. Snowfall was 27.0 inches as compared to 19.0 inches a year ago, however, in January of 1962 there were 40.5 inches of snowfall recorded. At the close of the month the average level of snow on the ground was 18 inches.

February: This month was somewhat colder than January with sub-zero readings on 8 days. Snowfall during the month was slightly less than a year ago, with 20.5 inches falling this year compared to 24.8 inches a year ago. At the close of February there were 22 inches of snow on the ground.

March: Daily maximum temperatures continued about the same this month as last. We had two days of -1 degree readings, recorded on the 6th and 8th. This was our last sub-zero temperatures prior to breakup. A total of 22.0 inches of snow fell during March as compared to 9.5 inches a year ago. At the close of the month there were 14.0 inches of snow on the ground.

April: Temperatures began climbing during April with readings ranging from the middle 40's to the middle 60's. Only 2.5 inches of snow fell with the last traces of snow disappearing on the 12th. One year ago the snow left for good on April 5. Also, 2.5 plus inches of rainfall were recorded and high winds were prominent most of the period.

May: Temperatures were a little higher during this month than one year ago with readings in the 60's, 70's and 80's. Thirteen days of the period were recorded in the 70's with two 80 degree readings. Precipitation was well over that recorded a year ago - 3.68 inches this year versus 2.00 inches a year ago. High winds were present most of the period.

June: Temperatures ranged from the high 70's and 80's to the low 90's. There were 2.72 inches of precipitation recorded during this month but high winds kept the ground dry and fire hazard remained high. Twenty two days of 70 degree or higher were recorded and rain fell on 11 days.

July: Twenty-three days of 80 degree temperature or higher were recorded with 3 of these days getting up to 90°. There were 3.71 inches of rainfall this month as compared to 1.71 inches a year

ago, however, the ground remained dry most of the time. Nearly all of the rain came in severe showers. There were only 7 days on which precipitation was recorded. Fire rating remained high with one fire starting from a severe lightning storm on the 22nd.

August: Temperatures ranged in the mid 70's throughout the entire month. We received 3.89 inches of precipitation as compared to 2.36 inches a year ago. Again this rainfall came in squalls with strong winds drying the ground almost immediately. Fire hazard remained high. A severe lightning storm on August 2 started a second fire which burned for over two weeks before being controlled. On the 11th .76 inches precipitation fell. The rain, coming over a 12 hour period, helped soak the ground and extinguish the fire.

September: Temperatures started dropping on the 5th. This was one of the coolest Septembers in recent years. Although temperatures remained in the 60's and 70's, cold winds prevailed. Precipitation amounted to 3.50 inches, up .42 of an inch over a year ago. Fire ratings went down during the month as the rain came in soaking drizzles.

October: Temperatures were again noted dropping with recordings in the 40 degree range on 12 days. By the end of the month temperatures were in the upper 50's, 60's and lower 70's. On the 4th the first snowfall was recorded. During the month 2.0 inches of snow with 2.18 inches of precipitation in the form of rain fell. No snow fell during October, 1963 and precipitation was only .65 inches. Our "Indian Summer" began on the 24th and continued through the remainder of the month.

November: The "Indian Summer" continued through the 16th with temperatures staying in the upper 50's and lower 60's. Snow started falling on the 18th and by the 21st had accumulated to 8.0 inches on the ground, with 6.5 inches falling on this date. Most of the snow disappeared with rain falling during the evening of the 27th and morning of the 28th, leaving one-half inch remaining on the ground. On the 29th 7.0 inches of snow fell and on the 30th an additional 2.0 inches. By the close of the period there were 9.0 inches of snow on the ground. Twenty-three inches of snowfall were recorded this month as compared to 6.0 inches in November, 1963. A year ago 3.26 inches of rainfall were recorded and only 3.02 inches during November this year. The high temperature of 62 degrees was recorded on the 8th with the low of 3 degrees being observed on the 22nd. Precipitation was recorded on 21 of the 30 days of this month.

December: The month started with a storm that seemed never to end. A total of 44.5 inches of snow fell. However, light rain (2.21 inches) fell on two days and settled the snow. At the close of the

period there were 21 inches of snow on the ground. The high temperature of 40 degrees occurred on the 11th and the low of -14 degrees on the 28th. Five days of below zero were recorded but temperatures usually stayed in the high 20's and 30's. Between the 22nd and 26th a total of 21.5 inches of snow fell giving us enough snow for a white Christmas. At the close of the period a total of 69.5 inches of snowfall had occurred.

B. Habitat Conditions

1. Water

Water supplies for 1964 returned to more normal levels following a relatively dry 1963. Snowfall for calendar year 1964 was 141.5 inches, a sharp increase over the recorded 87.95 inches in 1963. Precipitation totaled 32.39 inches in 1964, an increase of 8.63 inches over the 1963 total of 23.76 inches. Annual normal precipitation is 31.85 inches.

Spring breakup and peak run-off took place in April. No problems were encountered during the run-off and all water was efficiently shuttled through the refuge.

Flexibility of Seney's water control system was put to use. Spring flow through Unit I had to be diverted out D-Outfall until the steel sheet pilings were placed at the A-1 stilling basin in late June. Then, for most of the summer and early fall, water in the Driggs River and Pine Creek had to be reduced to an absolute minimum because of the bridge construction program. Consequently, most of the Driggs flow was diverted down the Diversion Ditch. To sharply reduce the Pine Creek flow, Unit I waters were diverted out A-1 and halted at D-Outfall; Unit II waters were shuttled from M-2 to T-2 and hence into the Manistique River rather than from M-2 to Sand Creek and hence into Pine Creek.

All pools were maintained at or near approved levels throughout the year.

Freeze-up occurred the last week of November - about two weeks earlier than 1963.

Refuge waters have long been considered highly acidic. A number of pH checks in June proved otherwise. Levels were determined at 22 locations. They ranged from pH 6.0 to 7.4 with the average near the 6.8 level.

2. Food and Cover

Adequate food and cover were available for all species. Only the early returning geese found a shortage of natural foods available. Refuge personnel, as usual, put out corn for them.

Waterfowl again made good use of the more available aquatic plants when pool levels were dropped in July. The exposed sand and mud flats were almost immediately covered with lush green stands of needle rush (Eleocharis acicularis). Canada Geese and Blue-winged Teal were particularly fond of the plant.

Lower water levels on F-1 Pool were especially attractive to good numbers of Ring-necked Ducks and Baldpate. E-1 Pool continued, as last year, to be the most used pool by the Canada Geese. The excellent beds of bushy pondweed (Najas flexilis) were heavily used on E-1. Migrant Canadas, numbering as high as 1,300, made extensive use of C-3 Pool for loafing and feeding until deer season opened on November 14.

Refuge farm units were used daily by hundreds of Canadas, Blues and Snows through much of the fall. Some 2,000 Canadas and several hundred Blues and Snows cleaned up the buckwheat in the Sub-Headquarters field through late September and early October. The lush second growth of sweet clover continued to hold the birds after the buckwheat was gone. Buckwheat was the big attraction at Chicago Farm, too, where up to 1,000 Canadas and 200 Blues and Snows were feeding in early October.

At Diversion Field, excellent use of oats and rye greens were made by geese through the fall period. On several occasions, numbers of Canada Geese in the field totaled over 1,000. The geese also made gratifying use of the new Walsh Unit.

White-tailed Deer, Sandhill Cranes, and Sharp-tailed Grouse again, as in the past, made extensive use of all the farm units.

II. WILDLIFE

A. Migratory Birds

1. Waterfowl

a. Geese

A single pair of Canada Geese were observed flying low over Upper F-1 Pool at 8:30 A.M. on March 2. These were the first arrivals for 1964. All pools were still ice covered and snow depth averaged 16 inches at the time. The March 2 appearance was the second earliest arrival on record.

By March 27 new arrivals had brought the total to over 600. A final total of returning Seney geese was recorded at 750 on April 10.

The first brood of geese to hatch was noted in a nest on top of a large old stump in the Upper Goose Pen Pool on May 13. In 1963 the first brood came off on May 9.

Nest predation by coyote and raccoon was extremely high in 1964. They took 410 eggs of 1121 laid by 235 geese. Nine geese were also killed on their nests by coyotes.

Goslings hatched totaled 627 compared with 604 in 1963. The 1963 and 1964 nesting survey summaries are shown in Table 1.

Table 1. A Comparison of Results of the 1963 and 1964 Canada Goose Nesting Surveys at Seney Refuge

Subject	1963		1964	
	Number	Percent	Number	Percent
Nests Destroyed	43	24.0	90	38.0
Nests Deserted	11	6.0	7	3.0
Nests Hatched	124	70.0	138	59.0
Total Nests	178	100.0	235	100.0
Eggs Destroyed	185	21.0	410	37.0
Eggs Unhatched *	44	5.0	55	5.0
Eggs Deserted	48	5.5	25	2.0
Eggs Other **	0	0	4	---
Eggs Hatched	604	68.5	627	56.0
Total Eggs	881	100.0	1,121	100.0

* Sterile, addled or dead embryo in advanced stage.

** Two eggs removed for pesticide study and two advanced embryos killed by dye injection.

The year's entire nesting effort was nearly wiped out in early June when disease claimed 500 goslings. Tentative conclusions reached by Patuxent Research Biologists implicated Leucocytozoon as the causative agent of death. A similar staggering loss was recorded in 1960 when approximately 690 goslings died.

Fall migrant numbers of geese were up this year. Peak populations of Canadas, Blues and Snows were recorded at 6,000, 600 and 400 respectively (Table 2). Consequently use days also increased from 309,000 last year to 334,000 (Table 3). The increase would have been even greater had the geese been able to remain to December 14 as they did a year ago. The last of the geese departed on November 29 this year.

The excellent refuge farm fields, and the increased availability of submerged aquatic plants probably contributed to the increase in goose use.

There was evidence that a few flocks of Lesser Canadas and Richardsons paused briefly before passing on. Their stop-overs are quite rare at Seney.

This was the unusual year so far as Blue and Snow Geese were concerned. Their main influx into the refuge, and movement through this part of the Upper Peninsula, came the first week in October. This is fully two weeks earlier than normal. More of these birds stopped at the refuge than usual and they stayed longer. They repeated this pattern in a number of places across the Upper Peninsula. As a result, hunters who usually only get a glimpse of the high flying Blues and Snows had several field days. In some places, according to reports, it amounted to a slaughter. Apparently, the young birds were not ready for the normal non-stop migration across Lake Superior and the Upper Peninsula.

Table 2. Peak Fall Goose Numbers at Seney Refuge, 1960 - 1964.

<u>Species</u>	<u>1964</u>	<u>1963</u>	<u>1962</u>	<u>1961</u>	<u>1960</u>
Canada Goose	6,000	4,400	3,200	7,000	5,700
Blue Goose	600	150	13	20	100
Snow Goose	400	100	7	10	100
Total Geese	7,000	4,650	3,220	7,030	5,900

Table 3. Fall Goose Use Days, Seney Refuge, 1960 - 1964.

<u>Species</u>	<u>1964</u>	<u>1963</u>	<u>1962</u>	<u>1961</u>	<u>1960</u>
Canada Goose	319,900	306,600	244,420	245,300	245,991
Blue Goose	9,275	1,687	90	280	1,750
Snow Goose	5,775	994	50	140	1,750
Total Geese	334,950	309,281	244,560	245,720	249,491

Banding efforts in 1964 resulted in the capture of 541 Canada Geese - the best year on record. Of the total, 316 were banded, as the remaining 225 were already carrying bands. Among the retrapped birds, the oldest band was found on an adult male that had been banded 11 years ago at Seney on October 24, 1953. Table 4 shows the results of goose trapping efforts since 1956.

Table 4. Seney Canada Goose Banding and Kill Data, 1956 - 1964.

<u>Year</u>	<u>Number Banded</u>	<u>Number Retraps</u>	<u>Total Trapped</u>	<u>Total Returns</u>	<u>Direct Returns</u>	<u>% Direct Returns</u>
1964	316	225	541	---	--	---
1963	219	155	374	36	15	6.8
1962	345	86	431	47	19	5.5
1961	119	64	183	7	7	6.7
1960	160	227	387	12	6	3.8
1959	230	46	276	26	16	8.7
1958	186	19	205	37	20	10.6
1957	42	6	48	16	10	23.8
1956	79	1	80	23	15	19.0

b. Ducks

The duck population at Seney made some recovery in 1964 from the abysmal lows of 1963 (Table 5). While total production calculated at 1,546 was only up about 276 over the 1963 total of 1,270, the survival of ducklings was much better in 1964. This brings up a point of more than casual interest. In 1963, gosling losses were almost nil, but duck production was nearly wiped out. The situation was exactly reversed in 1964 when 500 goslings died.

Of the 1,546 ducks produced, Black Ducks accounted for 350, Mallard - 300, Blue-winged Teal - 300, Hooded Merganser - 100, Common Merganser - 40 and Goldeneye - 6.

Table 5. Peak Duck Numbers and Use Days for May through August, 1958 - 1964.

<u>Year</u>	<u>Population Peak</u>	<u>Use-Days</u>
1964	2,365	220,788
1963	1,600	179,313
1962	3,670	266,700
1961	4,100	300,521
1960	3,445	239,820
1959	6,686	571,582
1958	6,755	704,040

Table 6 shows the peak fall duck populations and Figure 1 compares fall duck and goose use days.

Table 6. Peak Fall Duck Populations at Seney Refuge, 1960 - 1964.

<u>Species</u>	<u>1964</u>	<u>1963</u>	<u>1962</u>	<u>1961</u>	<u>1960</u>
Mallard	1,000	1,000	500	3,000	2,300
Black Duck	1,000	900	500	3,000	3,500
Baldpate	800	325	1,500	1,000	2,000
Pintail	15	0	0	400	250
G. Winged Teal	300	300	10	500	900
B. Winged Teal	500	300	60	800	1,300
Wood Duck	450	300	400	250	200
Redhead	10	15	0	0	100
Ring-neck	3,200	3,000	5,000	5,000	8,000
Canvasback	0	0	5	0	0
Scaup	250	10	4	200	600
Goldeneye	50	50	2	10	20
Bufflehead	100	40	40	60	100
Ruddy	0	0	0	2	0
Hooded Merganser	150	250	300	700	240
Common Merganser	140	250	350	200	160

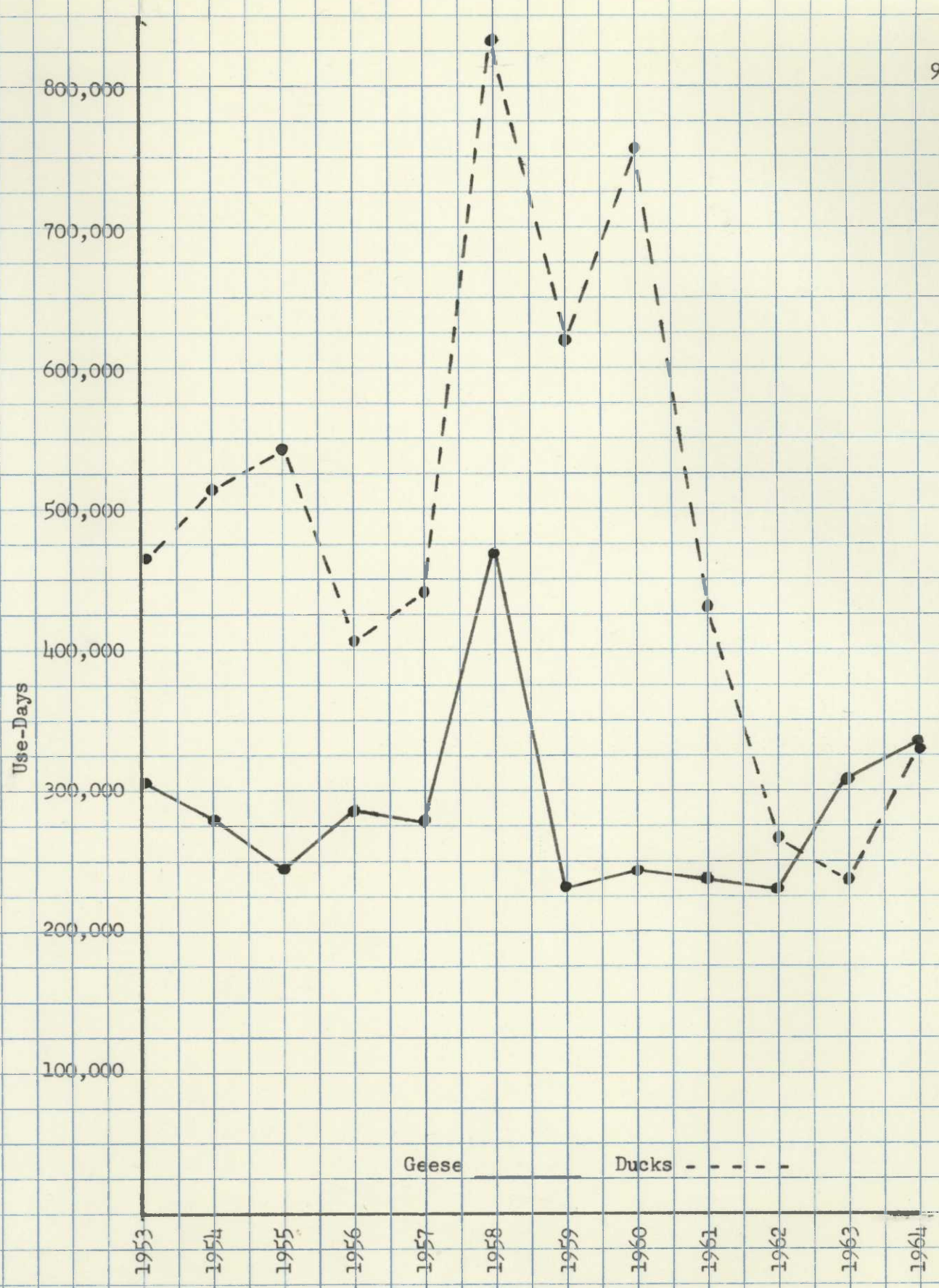


Figure 1. Goose and Duck Use Days, September - December, 1953 - 1964

Further evidence of the increase in duck numbers was reflected in our banding results (Table 7). Of interest, was the re-trapped male Mallard originally banded at Seney on August 18, 1953 as an immature.

Table 7. A Comparison of Duck Banding Results at Seney, 1962 - 1964

<u>Item</u>	<u>1962</u>	<u>1963</u>	<u>1964</u>
Ducks Banded	695	170	461
Predation Loss	60 (8.6%)	33 (19.4%)	44 (9.5%)
Drowning Loss	12 (1.2%)	2 (01.2%)	5 (1.1%)
Traps in Use	14	14	15
No. Trapping Days	57	59	64
Man Hours Expended	190	230	200
Ducks Banded/Man Hour	3.7	1.4	2.3
Ducks/Trap/Day	.87	.21	.48
Approx. Total Cost	\$570.00	\$630.00	\$600.00
Cost/Banded Duck	\$ 0.82	\$ 3.71	\$ 1.30

c. Coot

Coot are relatively rare here. Their peak fall numbers tumbled to 30 from the 1963 high of 200.

d. Swans

Only two swans were observed in the spring migration. One of the two, an immature, did not depart until mid-June.

For Seney, a record numbers of swans stopped in mid-November. Twenty-one were counted on F-1 Pool on the 17th. The group included three family groups with a total of eight cygnets. Seven sub-adults or non-breeders comprised the remainder.

2. Other Waterbirds

The first returning Common Loon was noted on C-2 Pool on April 13. A year ago the first observation was also recorded on April 13. Ten pairs nested on the refuge and succeeded in raising approximately 15 young.

For the second consecutive year, an alarming die-off of loons took place on Lake Michigan. Refuge personnel made several counts of dead loons along the northern Lake Michigan shoreline in October. On one 10 mile stretch south of Gulliver, Michigan 1,000 loons, dead and dying, had washed ashore. Estimates on total losses run from 3,500 to 9,000. Federal personnel lean toward the higher figure. Botulism of some type was suspected, but positive conclusions have not been reached by Patuxent pathologists.

The last two loons on the refuge were observed on M-2 Pool on October 14.

Sandhill Cranes were first observed on April 6 - three days later than in 1963. They were observed frequently during the year, but population estimates are mere guesses. Following the hatch, the estimated population was 90, an increase of 10 over a year ago. Last observation of cranes (4) was recorded on October 14, considerably earlier than the November 9 observation in 1963.

April 6 was, also, spring arrival day for Great Blue Herons. Their peak numbers were estimated at 100, and the last observation was noted on November 8.

Pied-billed Grebes were observed at frequent intervals. First sighting in the spring came on April 15. An estimated 60 were using the refuge by fall. Three grebes, the last observed, were noted on October 14.

Three Horned Grebes, relatively uncommon at Seney, were observed in September.

American Bitterns were noted from time to time by refuge personnel. An estimated 100 were using the refuge by September. They were last noted on October 15.

Virginia and Sora Rails are seldom seen. A brood of seven Virginia Rails were observed by a birder this summer.

3. Shorebirds and Gulls

The first Common Snipe was noted on April 15 and the last on November 13. Their "winnowing" again continued well into July. Peak numbers were estimated at 300.

Rare spring visitors included one Semi-palmated Plover and four Piping Plovers. All were observed on D-1 Pool on May 29.

Greater Yellowlegs, Killdeer, Spotted Sandpipers, Solitary Sandpipers, Black Terns, Common Terns, Forester's Terns, Ring-billed Gulls and Herring Gulls were noted from time to time from spring to fall.

B. Upland Game Birds

Woodcock have only recently started to receive attention at Seney, largely through the efforts of Dr. Fant Martin, Bureau Woodcock Specialist. The woodcock singing ground count, conducted on May 10, recorded ten "peenting" birds. This is an increase of five over the 1963 count. Peak fall numbers were estimated at 3,000, but could have been much higher.

Sharp-tailed Grouse appeared to be holding steady through 1964. Dancing ground counts tallied 81 birds this year compared with 80 a year ago. An estimated 250 were using the refuge in early fall.

Incidental observations of Ruffed Grouse indicated that their numbers were up over 1963. An estimated 2,000 grouse went into the fall period.

More observations of Spruce Grouse were recorded this year than in any recent year. At least 125 were believed to be living on the refuge.

C. Big Game Animals

The first deer on the refuge, following their winter stay at the Blaney yards, were observed on April 13. Most deer came through the mild open winter in excellent condition. The first fawn was noted on June 4. Observed deer totaled 748 in 1964.

Deer numbers were estimated at 2,500 head just prior to the hunt. This figure is based on two deer census drives conducted by refuge personnel, Michigan Department of Conservation Employees and 50 convicts. The 2,500 figure constitutes an increase of 500 over 1963.

Hunters had better success this year, but still only removed 170 head.

By the end of the year all deer had returned to the yards. Last tracks were noted on December 23.

Only three Black Bear were actually observed in 1964. Their sign, both droppings and freshly damaged junberry, pin cherry, and black cherry trees, were noted quite frequently. An estimated 12 bear were using the refuge.

No Moose or their tracks were noted on the refuge this year. A bull was illegally shot north of the refuge near the Walsh Tower, however. This was almost the same place that a cow had been shot in 1963.

D. Fur Animals, Predators, Rodents and Other Mammals

Ninety-six Otter were observed from January 14 to November 23. The total refuge population is estimated at 200. A refuge trapping season has been closed on Otter since 1960.

Beaver numbers appear to be increasing slightly. This is significant and may help re-populate some of the over-trapped areas off the refuge. The state closed the season on beaver trapping in Schoolcraft County

south of M-28 last year and are considering complete closure of the county for 1965. Refuge beaver trapping was closed, also, in 1964, and will remain closed in 1965.

Muskrat numbers remain low and relatively unchanged from a year ago. It appears that some extensive ditching in the cattail marshes is needed to help increase the refuge 'rat' population.

Mink and Weasel were noted infrequently through the year. Mink activity was more apparent than in 1963; however; and it appears that their numbers are up.

Woodchuck, as is their habit here, were frequently observed from the first sighting on March 23 through July. From August until freeze-up they are rarely seen.

The striped Skunk is not a numerous species at Seney, but numbers of observations were up from 1963.

Refuge predators include Coyote, Fox, Bobcat and Raccoon. Fox and Bobcat numbers are not high and they have not developed into problem species. Populations of Coyote and Raccoon reached explosive levels in 1964. They caused extensive nesting losses in the goose flock, and killed 44 ducks during the banding program. In an effort to control the predators, refuge personnel and three permittee trappers removed 76 Raccoons, 64 Coyotes, 11 Foxes, 9 Skunks, 4 Bobcats and 1 dog. Three Porcupines and one gosling were accidentally trapped during the removal program.

A large Gray Wolf, very rare here, was spotted by Manager Hakala on October 8. At the time, the animal was crossing M-28 about 3/4 of a mile west of Seney and heading south towards the refuge.

Observations indicate that Showshoe Hare numbers were up in 1964. Local hunters, in December, were having excellent luck.

Other mammals observed throughout the year include Red and Gray Squirrels (including a few of the black phase), Least and Eastern Chipmunks and various Bats mice and voles.

E. Hawks, Eagles, Owls, Crows and Ravens

*Go Hawks are not
uncommon for*

The Marsh Hawk continued to be the most abundant hawk in 1964. Infrequent observations were recored of Sparrow Hawks, Rough-legs, Broad-wings, Osprey and Coopers or Sharp-shinned Hawks. Of most interest was the second consecutive year of nesting of a pair of Pigeon Hawks between H and G Pools. They successfully raised two young. A number of birders were thrilled at the opportunity of seeing these birds.

Bald Eagles were frequently seen from March 2 to December 22. Ninety-one observations were recorded during the period. Active nests were again found in the familiar locations on B-1 and E-1 Pools. The C-2 nest was not active this year.

The refuge Bald Eagle population suffered the loss of two birds in 1964. One fine adult specimen was killed during a terrific windstorm on April 13. It was perched on a limb beside the nest on C-3 Pool when the huge Red Pine snapped off. Some part of the tree apparently struck the bird before it could escape. In the other loss an eaglet died in the E-1 nest for no apparent reason just prior to attaining flight.

Three eaglets in the two active nests did reach flight stage. Total refuge population in 1964 was nine, the same as in 1963.

Snowy Owls moved out of the far North again and one was observed on the refuge on October 23. Two others were seen on November 13 - one of them lying dead on the dike between F and E Pools.

Great Horned Owls and Barred Owls were seen and heard infrequently.

Crows were too abundant in the spring and caused some egg loss among the early nesting geese. The headquarters pet crow stayed all last winter, but disappeared in April and has not been seen since.

Ravens were quite commonly observed and heard through 1964.

F. Other Birds

Spring arrivals of some other birds, as noted by refuge personnel, are shown in Table 8.

Table 8. Spring Arrival Dates of Some Birds at Seney Refuge, 1964

Rusty Blackbird	3-13	Yellow-shafted Flicker	4-15
Mourning Dove	3-21	Phoebe	4-16
Red-wing Blackbirds	3-23	Barn Swallow	4-17
Robin	3-24	Tree Sparrow	4-22
Meadowlark	3-24	Vesper Sparrow	5-23
Grackle	4-4	Horned Lark	4-24
Cowbird	4-7	Purple Martin	4-24
Slate-colored Junco	4-8	Tree Swallow	4-25
Kingfisher	4-11	Myrtle Warbler	4-29
Song Sparrow	4-12		

A wide variety of small passerine birds occupy the many habitat niches at Seney during the brief summer months. Tourists from many parts of the nation come to Seney expressly for bird watching.

Results of the 1964 Christmas Bird Count are shown in Table 9. The Ruby-crowned Kinglet observation is questionable.

Table 9. Results of the 1964 Christmas Bird Count

<u>Species</u>	<u>Number</u>
Ruffed Grouse	1
Downy Woodpecker	3
Hairy Woodpecker	2
Blue Jay	11
Common Crow	2
Common Raven	67
Bald Eagle	1
Black-capped Chickadee	18
Red-breasted Nuthatch	2
Starling	2
Ruby-crowned Kinglet	20
Tree Sparrow	3
Common Redpoll	135
Snow Bunting	58

Totals: 14 species and 325 individuals

First snow buntings back this fall were noted on October 19. This compares with October 21 in 1963 and October 23 in 1962.

G. Fish

Fishery Biologists of the Michigan Department of Conservation again netted Northern Pike from a number of refuge pools in April. They removed 1,014 pike; down from the 1,786 taken in 1963. Under a cooperative agreement the legal sized fish (20 inches and over) are placed in the refuge Show Pools (180 in 1964) for public fishing use. The remaining smaller pike are placed in nearby Upper Peninsula lakes. Some 400 Perch were also removed in 1964, and placed in the Show Pools. A record of the fish removals are shown in Table 10.

H. Reptiles and Amphibians

Spring Peepers were first heard on April 16 and the first Painted Turtle on April 17.

Wendel J. Johnson, graduate student in zoology from Michigan State University, made a survey of Seney Refuge "herps". The results of his efforts are shown in Table 11.

Table 10. Fish Removal Record from Refuge Pools, April 1964

DATE	NET #	POOL	SPECIES TAKEN		
4/16/64	1	E	60	Northern Pike	
"	2	E	30	"	"
"	3	E (Net Removed)	1	"	"
"	4 & 5	M	56	"	"
"	6	M	73	"	"
"	7	M	29	"	"
"	8	A-2	6	"	"
"	9	A-2	13	"	"
"	10	A-2	9	"	"
"	11	C-1	12	"	"
4/17/64	1	E	35	"	"
"	2	E	55	"	"
"	4 & 5	M	62	"	"
"	6	M	76	"	"
"	7	M	17	"	"
"	8	A-2	6	"	"
"	9	A-2	13	"	"
"	10	A-2	8	"	"
4/18/64	11	C-1	88	"	"
4/20/64	1	E	8	"	"
"	2	E	47	"	"
"	4 & 5	M	58	"	"
"	6	M	58	"	"
"	7	M	29	"	"
"	8	A-2	14	"	"
"	9	A-2	30	"	"
"	10	A-2	9	"	"
4/22/64	9	A-2	12	"	"
"	10	A-2	15	"	"
"	11	C-1	20	"	"
"	11	C-1	250	Perch	
4/23/64	1	E	11	Northern Pike	
"	2	E	29	Northern Pike	
4/27/64	1	E	4	"	"
"	2	E	6	"	"
"	4	M	5	"	"
"	11	C-1	10	"	"
"	11	C-1	150	Perch	

Table 11. A Survey of Reptiles and Amphibians of Seney Refuge, 1964

<u>Chelydra serpentina serpentina</u>	Snapping Turtle
<u>Chrysemys picta belli</u>	Western Painted Turtle
<u>Chrysemys picta marginata</u>	Midland Painted Turtle
<u>Thamnophis sirtalis sirtalis</u>	Eastern Garter Snake
<u>Bufo americanus</u>	American Toad
<u>Hyla crucifer crucifer</u>	Spring Peeper
<u>Hyla versicolor versicolor</u>	Gray Treefrog
<u>Notophthalmus viridescens</u>	Newt
<u>Rana clamitans melanota</u>	Green Frog
<u>Rana pipiens</u>	Leopard Frog
<u>Rana septentrionalis</u>	Mink Frog
<u>Rana sylvatica</u>	Wood Frog
<u>Plethodon cinereus cinereus</u>	Red-backed Salamander
<u>Ambystoma sp.</u>	Salamanders

In addition to the above list, the Wood Turtle (Clemmys insculpta) and Red-bellied Snake (Storeria occipitomaculata) are found on the refuge.

Last observation of the year of a "herp" (a Painted Turtle) was recorded on November 8.

I. Disease

Approximately 500 goslings died between June 3-10. Leucocytozoon, a parasitic blood disease transmitted by Black Flies, has tentatively been considered the cause. Aspergillosis claimed an additional five goslings in late June.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

1. Projects Accomplished Under Accelerated Public Works.

Several projects which were scheduled under the Accelerated Public Works Program were completed this period.

A new steel piling and concrete type bridge now replaces the old wooden structure which spanned Pine Creek on the Chicago Farm Road. A similar structure was installed to replace the wooden bridge over the Driggs River on the road from Chicago Farm to Marsh Creek. These bridges will receive heavy use during the annual deer hunting season as well as regular refuge operational use. All construction was performed under contract with Thornton Construction Company, Hancock, Michigan, the successful bidder.

Repairs were accomplished on the Marsh Creek spillway-bridge structure. Concrete was poured to reinforce the middle pier. H.J. Ware was the contractor.

One hundred red pine logs were cut by the crew to be used for piling at the A-1 stilling basin.

Piling was driven in February and rock rip-rap was hauled in to protect stream banks and bottom. Four hundred dollars of the \$970.00 cost of driving the piling was covered by Accelerated Public Works funds.

The Accelerated Public Works crew cleared the tag alder brush from approximately 10 acres of land along the north side of I-1 Pool. Both ducks and geese have made greater use of this area since the brush "screen" has been cleared away.

A storm proof box was installed at the fuel pumps in which to house a fire extinguisher and a sheet for recording fuel receipts and deliveries. The record sheet is fastened with clamps to a writing table which swings back behind the extinguisher when not in use. The extinguisher can be taken from the box easily and quickly should it ever be needed.

2. Island Improvement Work.

Brush and dead trees were cleared from the islands in D-1 Pool to make the islands more suitable for goose nesting sites. Two dead pine snags were left, both of which are favorite perches of Bald Eagles.

A major development project was undertaken in I-1 Pool. The water was drawn down during the winter and in July and, with the aid of heavy equipment, 30 new islands were constructed giving a total of 45 safe nesting islands in the pool. The islands were limed, fertilized and seeded with a mixture of grass seed, rye and mulched with hay to establish a quick vegetational cover. Sedges, rushes and other natural vegetation were heeled in and rip-rap placed around the sides to help hold the islands against wave action.

A narrow strip of land reaching nearly to the shore from a nearby island has been the avenue of access to the island for predators. The nests on this island complex have been knocked out the past 3 years. An experimental attempt was made to remove this land bridge using an ammonium nitrate and fuel oil mixture as an explosive. The project was supervised by Michigan Department of Conservation Biologist Robert Strong. The experiment was only partially successful. The remaining land was removed with heavy equipment.

3. Trap Site Development.

A trap site was developed, at the east end of E-1 Pool, for setting up the leads and corral nets for drive trapping. Fill material was brought in and the bank sloped to provide the space needed for the corral holding pen. The site was limed, fertilized and seeded to grasses to establish a vegetational cover.

On the west end of E-1 Pool a site was developed for cannon trapping. Fill material was brought in to provide a good bait site at the waters edge. Permanent posts were set and holes bored through them to serve as mounts for the cannons. This area also was limed, fertilized and seeded down.

A Colorado trap was built on J-1 Pool for trapping ducks. With slight modifications to meet our local situation we feel this type of trap will be more effective than the previously used Ohio traps.

The large walk-in trap behind residence 1 was repaired and used with good success this fall.

4. Road Improvement

Two and one-half miles of road around the Lower Goose Pen were repaired and gravelled. Also the north and south entrance roads to headquarters were top dressed with gravel. The county highway department seal-coated the road to Sub-headquarters, 0.3 of a mile of which is within the refuge boundary. The cost to the refuge was \$1,052.25.

The Michigan Public Service Commission was petitioned to change the status of the Walsh railroad crossing from a private to a public crossing. Work was done at the crossing to improve visibility down the tracks. Several trees were removed and the bank was cut down so that visibility is excellent at a safe distance from the tracks. Advance railroad warning signs and cross-bucks need to be installed. Final action is pending.

5. Construction

The log piling which was installed at A-1 stilling basin as a temporary measure in February was replaced with steel sheet piling in June. The job was done under contract by Al Boyd Construction Co. for \$1,638.00.

A bulletin board was constructed and installed at the Driggs Picnic site. This area is used mainly by transient tourists and the information posted here is the only contact that we have with some of these people.

Two large information signs (4' x 8') were painted and erected at the entrances to the areas open to deer hunting. The signs listed the special regulations applying to hunting on the refuge and also displayed a detailed map of the area. A number of "No Littering" signs also were installed.

Several items were made in connection with the new visitor center. A rustic sign was constructed and erected to direct traffic to the visitor center. Also a bulletin board was made for the outside of the building to post program schedules and other pertinent information.

A brick wall was built around the air conditioning cooling tower to conceal it and improve the appearance of the building. The work was done under contract by Kaysner Construction Company, Sault Ste. Marie, Michigan for \$1,098.00.

Within the building the panels which will support the exhibit cases were installed. Also the installation of the wiring and speakers for the sound system was completed. The information counter was fastened permanently in place and a second section was constructed along the wall. This section will house the public address amplifier and eventually a turn-table or tape recorder.

6. Landscaping and Erosion Control

Topsoil was hauled and spread around the visitor center. After much watering and a second application of seed and mulching, a catch of ground-cover was established.

Hay mulching was spread on several miles of sand blows along the tour routes to fix the soil until vegetation can become established. More of this work needs to be done.

7. Maintenance and Replacement

a. Outbuildings

The boat house was renovated for Patuxent's research experimental work. Cracks were caulked and double screen doors constructed to keep out insects. The electrical wiring was brought up to code, additional lights installed and water was piped in.

The overhead lift mechanism was repaired on the No. 2 garage door at the service building.

The plumbing was repaired and a new fixture was installed in the public restroom located behind the office.

Improvements made on the outdoor toilets at the Wigwam picnic site include putting in a false ceiling to conceal the roof rafters and painting the interior white. Also, louvers were constructed in the rear wall to aid ventilation and to allow more light to enter.

The walls and ceiling in the rear office at headquarters were repainted.

b. Residences

New heat exchangers were installed in the furnaces in residences 136 and 137. Also new flourescent overhead light fixtures were installed in the kitchens and the utility rooms of these residences.

The side bedroom and the living room were painted in residence 137.

Several rooms were repainted and the floors sanded and revarnished in the residence at sub-headquarters. The electrical wiring was checked and brought up to current code specifications. The old fuse box was replaced with a circuit breaker switch panel. New light fixtures and bathroom fixtures were installed. A new electric range also was purchased for this residence.

c. Tour Routes

Nine miles of the guided tour route were graded and oiled prior to beginning the tours on June 15.

8. Equipment Received

The only new vehicle received this period was a Plymouth sedan-delivery. Three used vehicles were obtained. A White tractor was picked up from Erie Army Depot and has been used a great deal on the lowboy, hauling equipment. A Chevrolet dump truck and a 1½ ton International stake truck have helped greatly to meet our needs.

9. Major Repair of Equipment

The John Deere 420 crawler tractor was repainted and the engine was overhauled. The 1956 Dodge, 1½ ton stake truck and the 1958 Chevrolet dump truck were painted. The clutch and transmission were rebuilt in the 1958 Chevrolet dump truck. All of this equipment had been acquired through military surplus.

New rolls, rails and drive sprockets were installed on the International TD-14 tractor. This piece of equipment has been vital in our habitat improvement work.

B. Plantings

1. Aquatic and Marsh Plants

None this period.

2. Trees and Shrubs

None this period.

3. Upland Herbaceous Plants

None this period.

4. Cultivated Crops

Three fields containing a total of 200 acres were farmed under cooperative agreement by a local farmer. Twenty acres were planted to oats which ran about 50 bushel per acre. This is a good yield for our area and reflects the good growing season we had this summer. The Government's share of 20% was left standing in the field to be utilized by wildlife.

The only buckwheat put out this year was the 40 acres planted by the cooperative farmer at Sub-Headquarters and Chicago Farm Units. The crop did very nicely and was favored by a late fall with killing frost holding off until September 15. About the time the farmer was thinking of getting his combine out, over 3,000 Canada Geese and a couple hundred Blues and Snows began making use of the buckwheat. Within a few days the birds had most of the grain "harvested".

The remainder of the farming program was handled by refuge personnel with a total of 178 acres being cropped. Of this, 12 acres were winter rye from the fall of 1963 which was left to ripen. This was supplemented with 83 acres of oats planted in the spring of 1964 to provide 95 acres of ripened grain this fall.

In late August and early September the strips between the ripening grain were planted to winter rye which sprouted quickly to provide 83 acres of lush green forage for migrating geese. Sandhill Cranes and Sharp-tailed Grouse also made use of the ripe grain through September and October and a few geese used both grain and forage as late as the second week in November.

Eight-hundred twenty-three tons of lime were purchased from Inland Lime and Stone Company of Gulliver, Michigan at a cost of \$1,112.00 and was hauled to the refuge by Burton Trucking Company of Gould City, Michigan for \$1,395.00. Accelerated Public Works funds covered this purchase.

One-hundred eighty-two tons of lime at a cost of \$1.75 per ton totaling \$318.50 were spread by Mr. Max Macaulay of McMillan Michigan.

Lime was applied to all of Smith Field, to 20 acres in the Walsh Unit and to 23 acres in the Diversion Unit prior to planting. Refuge personnel spread an additional 33 tons of agricultural lime at the rate of 3 ton per acre. It was spread on the lawn areas around headquarters, the visitor center, the residences and on the newly planted islands in I-1 Pool. Fifty tons of lime aggregate up to 1 inch in size was used as rip-rapping in erosion control work around the islands in I-1 Pool and the visitor center peninsula.

C. Collections and Receipts

1. Seed and other propagules

None this period.

2. Specimens

A number of specimens were picked up throughout the year and preserved as potential exhibit material for the visitor center. The list includes 1 coyote, 4 raccoon, 1 adult Blue Goose, 1 Immature Blue Goose, 1 Old Squaw Duck and 1 Snowy Owl.

D. Control of Vegetation

Tag alder brush was cleared along the north side of I-1 Pool. About 10 acres have been cleared and the brush piled and burned. The geese make a great deal more use of the north shore since this cover has been removed.

E. Planned Burning

None this period.

F. Fires

Throughout the year the fire danger was much lower than it was last year. Nevertheless, two forest fires occurred. They resulted from lightning strikes in two separate electrical storms. In both cases the fires didn't flare up until two days after the storm.

The first fire was in red pine-jack pine forest type in Section 24, T44N, R14W with 30 acres being burned. The flames were confined mainly to the ground cover with branches up to 12 feet high being burned. Damage was principally to the tree reproduction. This burn likely will benefit wildlife as the new vegetation returns. Control cost totalled \$873.19.

The second fire was in Section 34, T45N, R15W. Approximately 21 acres were burned. In this area the sand subsoil is covered with

from 3 to 6 feet of peat which was dry on the surface and burned for several weeks before it could be extinguished. The vegetation consists of bog birch and willow brush. No merchantable timber was lost and the opening in the brush will be of benefit especially to Sharp-tailed Grouse. Control cost totalled \$3,518.41.

IV. RESOURCE MANAGEMENT

A. Grazing

None this period.

B. Haying

Approximately 140 acres of the cultivated land were in hay all of which was harvested by the cooperative farmer. The total yield was 171 tons with 34 tons being the refuge share. The range in yield for the various fields was from 1 ton per acre to 1.9 tons per acre. These figures reflect the condition of the stand more than the type of growing season. The refuge share was used as mulching in erosion control work.

Refuge personnel harvested 12 tons of hay from the roadside along state highway M-28. This hay also was used for mulching sand blows.

C. Fur Harvest

Trapping for fur was not authorized during this period. Muskrat populations throughout the refuge remain low with very little house building activity. However, populations in the marsh east of highway M-77 are holding at good levels. Refuge populations of beaver, otter and mink are fair. Coyote and raccoon populations appeared to be nearing explosive proportions.

Three trapping permits were issued to control coyote and raccoon. The persons receiving them were Herbert Burton, Germfask, Michigan; Cameron Coe, Manistique, Michigan; and Frank Generou, Newberry, Michigan. They received 100% of their catch. A total of 64 coyote, 52 raccoon, 11 fox, 9 skunk, 4 bobcat, 3 porcupine, 1 dog and 1 gosling were taken.

D. Timber Removal

One hundred red pine logs were cut and used for piling at the A-1 stilling basin.

Andrew Swisher of Germfask, Michigan obtained a special use permit to remove 4 cords of dead and down timber from Section 9, T44N, R13W. He was charged \$0.50 per cord.

E. Commercial Fishing

None at this refuge.

F. Other Uses

The Walsh and Driggs railroad sidings continue to receive good use as jobbers working on State lands bring pulpwood to these points for loading.

V. FIELD INVESTIGATION OR APPLIED RESEARCH

A. Waterfowl Disease Study (Leucocytozoon)

Dr. James Barrow of Hiram College, Ohio completed five years of data gathering in September of 1963. He did return briefly to the refuge in June of 1964 during the gosling die-off. A publication or completion report was expected a year ago. To date it has not been received. The information he has gathered may be of extreme importance in the future management of the Seney goose flock.

B. Blackfly Study

Dr. Carlton M. Herman of the Patuxent Wildlife Research Center has been supervising the study. It is closely related to the Leucocytozoon study above, but deals with the vector of the disease. Dr. I. Barry Tarshis of Patuxent was the investigator in 1964. He was assisted by Hiram College student, David Rintamaa. Through Dr. Tarshis, Patuxent is trying first to determine which fly is the vector, and secondly how to control it. Dr. Tarshis has been having some success in hatching the flies from eggs collected at Seney under laboratory conditions at Patuxent.

This was the second consecutive year of Patuxent's stepped-up program on the Black Fly. Progress reports have just been received for both years..

C. 1964 Aquatic Plant Survey

Chester W. Laskowski, graduate student from the University of Michigan, conducted an aquatic plant survey on the refuge in July and August. He collected and identified 74 species of aquatics, and donated pressed specimens of most to the refuge. His manuscript of identifications is on file at refuge headquarters. Mrs. Hakala and Mrs. Sherwood later mounted the aquatic specimens for the small refuge herbarium.

D. A Critical Evaluation of Some Possible Limiting Factors of the Seney Goose Flock - Seney Project 1

Two and one-half years of work have been completed on this project. Progress reports covering all phases of the study for 1963 and 1964 are on file in the Minneapolis Regional Office, Washington Central Office and at Seney Refuge.

E. A Study of Family Group Relationships and Breeding Behavior in a Wild Population of Canada Geese - Seney Project 2

This study has been conducted by the Refuge Biologist simultaneously with the preceeding project. The 1963 progress report was submitted through regular channels in February, 1964. A progress report covering the 1964 investigations will be submitted in February, 1965.

VI. PUBLIC RELATIONS

A. Recreational Uses

Public visitation maintained its upward trend this year with 80,000 visitor use days being recorded as folks decided to "stop a while" at Seney. The program changed only slightly over last year, the change being that the new visitor center was open from August 22 through September 13. The 9 exhibits that were completed were supplemented with photographs of wildlife. The remaining 16 exhibits are presently under construction in Minneapolis.

A break down of visitor use follows:

<u>Hunting</u>	<u>Fishing</u>	<u>Sight Seeing</u>	<u>Economic Use</u>
2,836	6,860	65,104	5,200

This year 621 cars with 2,755 passengers traveled through the refuge on a self-guided tour. The route, which was open to the public from June 15 through September 13, promises to be a big attraction in the future as visitors stop specifically for that trip.

The conducted tour given at 6:00 P.M. daily has been another big drawing card. A total of 3,041 visitors traveling in 683 cars made this tour during the regular visitor season of June 15 through Labor Day.

The fishing use has practically all been summer time fishing. The big lakes in the area afford better ice fishing and attract most of the winter fishing enthusiasts.

B. Refuge Visitors

Pages 27 through 38 include a listing of the refuge visitors for this year.

<u>Date</u>	<u>Name and Title</u>	<u>Address</u>	<u>Representing</u>
1-2-64	William French, Refuge Manager	Havana, Illinois	U. S. Fish and Wildlife Service
1-2-64	Bill Spaulding, Fisheries Biologist	Marquette, Michigan	Michigan Conservation Department
1-3-64	Leland Anderson, Fisheries Biologist	Marquette, Michigan	Michigan Conservation Department
1-6-64	Les Walstrom, Conservation Officer	Seney, Michigan	Michigan Conservation Department
1-15-64	Larry Hough, Field Aid	Manistique, Michigan	U.S. Geological Survey
1-15-64	John Oberg, Field Aid	Escanaba, Michigan	U.S. Geological Survey
1-22-64	Loyd Schmenaurer, Game Biologist	Newberry, Michigan	Michigan Conservation Department
1-22-64	Mrs. C.S. Johnson	Manistique, Michigan	Visit
1-22-64	Mrs. Lloyd Lindvall	Manistique, Michigan	Visit
1-23-64	Curt Derr	Escanaba, Michigan	Portland Cement Co.
1-27-64	Conrad Denison, Foreman	Munising, Michigan	Denison Construction Company
1-28-64	Lloyd Lindvall, GMA	Manistique, Michigan	U.S. Fish and Wildlife Service
2-3-64	Walter Neimi, Fire Officer	Seney, Michigan	Michigan Conservation Department
2-4-64	Frank E. Denome	Escanaba, Michigan	Operating Engineers Union
2-7-64	Al Boyd	Germfask, Michigan	Boyd Construction Company
2-10-64	Bill Burton	Gould City, Michigan	Burton Trucking Company
2-13-64	Les Walstrom, Conservation Officer	Seney, Michigan	Michigan Conservation Department
2-17-64	Bill Burton	Gould City, Michigan	Burton Trucking Company
2-26-64	Lloyd Lindvall, G.M.A.	Manistique, Michigan	U.S. Fish and Wildlife Service
2-26-64	Clyde Lambert, Conservation Officer	Manistique, Michigan	Michigan Conservation Department
2-27-64	Gerald Falls, Area Utilization Officer	Detroit 31, Michigan	Interagency Motor Pool District
2-27-64	Bill Burton	Gould City, Michigan	Burton Trucking Company
2-28-64	John Lustila, Foreman	Germfask, Michigan	Schoolcraft County Road Comm.
2-28-64	Les Walstrom, Conservation Officer	Seney, Michigan	Michigan Conservation Department
2-28-64	Dick Molten, Pilot	Newberry, Michigan	Michigan Conservation Department
3-2-64	Lloyd Lindvall, G.M.A.	Manistique, Michigan	U.S. Fish and Wildlife Service
3-4-64	Harry Preiskorn	Germfask, Michigan	Cooperative Farmer
3-4-64	Laverne Macuailey	Germfask, Michigan	Cooperative Farmer
3-10-64	Herbert Musselman	Germfask, Michigan	Interview for Maintenance Job
3-11-64	Glen C. Losey	Germfask, Michigan	Interview for Maintenance Job
3-11-64	Stan Baldwin, Field Aid	Lansing, Michigan	U.S. Weather Bureau
3-11-64	Leo D. Lawrence	Germfask, Michigan	Summer employment
3-11-64	John Lustila, Foreman	Germfask, Michigan	Schoolcraft County Road Comm.
3-12-64	Emmett Crown	Germfask, Michigan	Donate mounted Snowy Owl to Refuge

<u>Date</u>	<u>Name and Title</u>	<u>Address</u>	<u>Representing</u>
3-12-64	Les. Walstrom, Conservation Officer	Seney, Michigan	Michigan Conservation Department
3-12-64	Clyde Hutt	Seney, Michigan	Visit
3-12-64	Michael Collins	Germfask, Michigan	Summer employment
3-16-64	Andrew Swisher	Germfask, Michigan	Fire wood
3-16-64	Harry Burton	Germfask, Michigan	Fire wood
3-16-64	Leo D. Lawrence	Germfask, Michigan	Summer employment
3-16-64	Herbert Burton	Germfask, Michigan	Predator trapping
3-18-64	Les Walstrom, Conservation Officer	Seney, Michigan	Michigan Conservation Department
3-18-64	Larry Hough, Field Aid	Manistique, Michigan	U.S. Geological Survey
3-18-64	John Oberg, Field Aid	Escanaba, Michigan	U.S. Geological Survey
3-19-64	Les Walstrom, Conservation Officer	Seney, Michigan	Michigan Conservation Department
3-19-64	Raymound Tuttle	Germfask, Michigan	Summer employment
3-19-64	Lloyd Lindvall, G.M.A.	Manistique, Michigan	U.S. Fish and Wildlife Service
3-19-64	Michael Collins	Germfask, Michigan	Summer employment
3-20-64	Les Walstrom, Conservation Officer	Seney, Michigan	Michigan Conservation Department
3-23-64	Eugene Nesler	Germfask, Michigan	Summer employment
3-23-64	Curtis Cuthbertson	Germfask, Michigan	Summer employment
3-23-64	Mrs. Mary Spear Ross	Marquette, Michigan	Bird Observations
3-23-64	Bill Burton	Gould City, Michigan	Burton Trucking Company
3-24-64	Leo D. Lawrence	Germfask, Michigan	Summer employment
3-24-64	Floyd Hewitt	Germfask, Michigan	Summer employment
3-25-64	John Rutherford	Germfask, Michigan	Visit
3-25-64	Danial Rutherford	Germfask, Michigan	Visit
3-30-64	Harold Rupright	Germfask, Michigan	Summer employment
3-30-64	Barry Rich	Manistique, Michigan	Summer employment
3-31-64	Glen C. Losey	Germfask, Michigan	Maintenance man position
4-1-64	Leo R. Norton, Chief	Grand Marais, Michigan	U.S. Coast Guard
4-1-64	Barry Tarshis, Doctor	Patuxent, Maryland	U.S. Fish and Wildlife Service
4-1-64	Carlton Herman, Doctor	Patuxent, Maryland	U.S. Fish and Wildlife Service
4-1-64	Herbert Musselman	Germfask, Michigan	Summer employment
4-3-64	Les Walstrom, Conservation Officer	Seney, Michigan	Michigan Conservation Department
4-6-64	Les Walstrom, Conservation Officer	Seney, Michigan	Michigan Conservation Department
4-6-64	Laverne Macauley	Germfask, Michigan	Cooperative Farmer
4-7-64	James Scully, Fishery Supervisor	Marquette, Michigan	Michigan Conservation Department
4-7-64	Leland Anderson, Fisheries Biologist	Newberry, Michigan	Michigan Conservation Department

<u>Date</u>	<u>Name and Title</u>	<u>Address</u>	<u>Representing</u>
4-7-64	Leo D. Lawrence	Germfask, Michigan	Summer employment
4-9-64	George Brusco, Ass't District Supervisor	Newberry, Michigan	Michigan Conservation Department
4-9-64	Owen Bennett, District Supervisor	Newberry, Michigan	Michigan Conservation Department
4-10-64	Dave Arnold, Biologist in Charge	Shingleton, Michigan	Michigan Conservation Department
4-10-64	Loyd Schmenaurer, Game Biologist	Newberry, Michigan	Michigan Conservation Department
4-13-64	Joe Richey, Engineer	Minneapolis, Minneaota	U. S. Fish and Wildlife Service
4-14-64	Henry J. Ware, contractor	Barbeau, Michigan	Pre-construction meeting
4-14-64	Jack Raisanen, Business Representative	Houghton, Michigan	Pre-construction meeting
4-14-64	James Barker, Maintencenceman	Germfask, Michigan	U. P. Power Company
4-14-64	James Foley, Maintencenceman	Newberry, Michigan	Michigan Bell Telephone Company
4-14-64	Joe Richey, Engineer	Minneapolis, Minnesota	U. S. Fish and Wildlife Service
4-14-64	John Cole	Germfask, Michigan	Summer employment
4-14-64	Albert Boyd, contractor	Germfask, Michigan	Boyd Construction Company
4-14-64	Leland Anderson, Fisheries Biologist	Newberry, Michigan	Michigan Conservation Department
4-15-64	Les Walstrom, Conservation Officer	Seney, Michigan	Michigan Conservation Department
4-15-64	Leland Anderson, Fisheries Biologist	Newberry, Michigan	Michigan Conservation Department
4-15-64	Merle Archey	Thompson, Michigan	Michigan Conservation Department
4-15-64	Ted Servinski, Biologist	Marquette, Michigan	Michigan Conservation Department
4-15-64	Ronald Whitland, Biologist	Marquette, Michigan	Michigan Conservation Department
4-15-64	William G. McClure, G.M.A.	Mason, Michigan	U. S. Fish and Wildlife Service
4-15-64	Benny Long	Paradise, Michigan	Visit
4-15-64	Michael J. Collins	Germfask, Michigan	Summer employment
4-16-64	Roy Babbitt	Thompson, Michigan	Michigan Conservation Department
4-16-64	Art Feldhauser, Biologist	Marquette, Michigan	Michigan Conservation Department
4-16-64	John A. Scott, Biologist	Marquette, Michigan	Michigan Conservation Department
4-16-64	Leland Anderson, Fisheries Biologist	Newberry, Michigan	Michigan Conservation Department
4-17-64	Victor Herlik	Thompson, Michigan	Michigan Conservation Department
4-17-64	Merle Archey	Thompson, Michigan	Michigan Conservation Department
4-17-64	Leo D. Lawrence	Germfask, Michigan	Summer employment
4-17-64	Lloyd Lindvall, G.M.A.	Manistique, Michigan	U. S. Fish and Wildlife Service
4-20-64	Leland Anderson, Fisheries Biologist	Newberry, Michigan	Michigan Conservation Department
4-22-64	Dave Arnold, Biologist in Charge	Shingleton, Michigan	Michigan Conservation Department
4-22-64	Al Harger, Biologist	Shingleton, Michigan	Michigan Conservation Department
4-22-64	Joe Cox, Landscape Specialist	Lansing, Michigan	Michigan State University
4-22-64	Frank Opolka, Conservation Instructor	Stephenson, Michigan	Stephenson Consolidated Schools
4-22-64	Leo D. Lawrence	Germfask, Michigan	Summer employment

<u>Date</u>	<u>Name and Title</u>	<u>Address</u>	<u>Representing</u>
4-24-64	Rose Lashofel, Reporter	Manistique, Michigan	Escanaba Daily Press
4-24-64	Don Prinz	Manistique, Michigan	United Parcel Service
4-24-64	Lynn Wilson	Manistique, Michigan	Visit
4-24-64	Lloyd Lindvall, G.M.A.	Manistique, Michigan	U. S. Fish and Wildlife Service
4-24-64	Merrill Archey	Thompson, Michigan	Michigan Conservation Department
4-24-64	Victor Herlik	Thompson, Michigan	Michigan Conservation Department
4-27-64	Kenneth Lytle	Germfask, Michigan	Summer employment
4-27-64	Merrill Archey	Thompson, Michigan	Michigan Conservation Department
4-27-64	Victor Herlik	Thompson, Michigan	Michigan Conservation Department
4-28-64	Albert Boyd, Contractor	Germfask, Michigan	Boyd Construction Company
4-28-64	Roy Smith	Germfask, Michigan	Boyd Construction Company
4-28-64	Merrill Archey	Thompson, Michigan	Michigan Conservation Department
4-28-64	Victor Herlik	Thompson, Michigan	Michigan Conservation Department
4-28-64	Edward Weiland, President	Marquette, Michigan	Marquette Audubon Society
4-29-64	Art Hauswirth	Hancock, Michigan	Thornton Construction Company
4-29-64	William Jenerou	Manistique, Michigan	Timber cutting
4-29-64	Max Frimadig, Recreational Officer	Marquette, Michigan	Michigan Conservation Department
4-29-64	Paul Challancin, Education Supervisor	Marquette, Michigan	Michigan Conservation Department
4-29-64	Dave Arnold, Biologist in Charge	Shingleton, Michigan	Michigan Conservation Department
4-29-64	Albert Boyd, Contractor	Germfask, Michigan	Boyd Construction Company
4-30-64	George Pittee, Investigator	Escanaba, Michigan	Farmers Insurance Company
4-30-64	Dave Rood, Editor	Manistique, Michigan	Manistique Pioneer Tribune
4-30-64	Art Hauswirth	Hancock, Michigan	Thornton Construction Company
4-30-64	John Mattson, Fire Officer	Grand Marais, Michigan	Michigan Conservation Department
4-30-64	Walter Neimi, Fire Officer	Seney, Michigan	Michigan Conservation Department
4-30-64	Charles Doonan	Escanaba, Michigan	U. S. Geological Survey
4-30-64	Ted Thompson	Escanaba, Michigan	U. S. Geological Survey
5-1-64	Al Harger, Biologist	Shingleton, Michigan	Michigan Conservation Department
5-1-64	Harvey Saunders (Retired)	Germfask, Michigan	Visit (former employee)
5-1-64	Edward Nichols	Carterville, Illinois	Crab Orchard Nat'l Wildlife Refuge
5-4-64	Albert Venema	Coopersville, Michigan	Vehicle sale
5-4-64	Thurman Skarritt	Germfask, Michigan	Vehicle sale
5-4-64	Raymound Krusic	Manistique, Michigan	Vehicle sale
5-5-64	Leonard England, Postmaster	Germfask, Michigan	Vehicle sale
5-5-64	John Winship, Pilot-Biologist	Minneapolis, Minnesota	U. S. Fish and Wildlife Service
5-5-64	Lloyd Tyeson	Minneapolis, Minnesota	Visit

<u>Date</u>	<u>Name and Title</u>	<u>Address</u>	<u>Representing</u>
5-5-64	Dave Arnold, Biologist in Charge	Shingleton, Michigan	Michigan Conservation Department
5-5-64	Al Harger, Biologist	Shingleton, Michigan	Michigan Conservation Department
5-6-64	Loyd Schmenaurer, Game Biologist	Newberry, Michigan	Michigan Conservation Department
5-6-64	Dave Arnold, Biologist in Charge	Shingleton, Michigan	Michigan Conservation Department
5-6-64	John Winship, Pilot-Biologist	Minneapolis, Minnesota	U. S. Fish and Wildlife Service
5-6-64	Dave Pelletier, Conservation Teacher	Garden, Michigan	Garden Township Schools
5-6-64	Neil Parkinen, Biology Teacher	Garden, Michigan	Garden, Township Schools
5-6-64	Leland Anderson, Fisheries Biologist	Newberry, Michigan	Michigan Conservation Department
5-6-64	Chio Cheepsuwan, Training Division	Bangkok, Thailand	C. D. Department
5-6-64	Ray Gunimusun, Extension Agent	Newberry, Michigan	Luce County Extension Service
5-7-64	John Zellar	Germfask, Michigan	Vehicle Sale
5-7-64	Dr. Eric Bourdo, Director Ford Center	L'Anse, Michigan	Michigan Technological University
5-8-64	Lloyd Gray, Sheriff	Manistique, Michigan	Schoolcraft County
5-11-64	Clair Rollins	Minneapolis, Minnesota	U. S. Fish and Wildlife Service
5-11-64	George Lumb	Washington, D. C.	U. S. Fish and Wildlife Service
5-11-64	Herbert Burton	Germfask, Michigan	Trapping predators
5-12-64	Tyrus Washell	Germfask, Michigan	Thornton Construction Company
5-12-64	Herbert Burton	Germfask, Michigan	Trapping predators
5-13-64	Miss Dawn Ostrander, teacher	Grand Marais, Michigan	Grand Marais Public Schools
5-13-64	Guy Block, Biology teacher	Grand Marais, Michigan	Grand Marais Public Schools
5-13-64	Loyd Schmenaurer, Game Biologist	Newberry, Michigan	Michigan Conservation Department
5-13-64	Robert Strong, Game Biologist	Sault Ste. Marie, Mich.	Michigan Conservation Department
5-13-64	Fred Bevis and wife	L'Anse, Michigan	Ford Forestry Center
5-13-64	Roy Sandstrom	Soldatna, Alaska	Bureau of Public Roads
5-13-64	Ruth Sandstrom	Soldatna, Alaska	Visit
5-13-64	Rhoda Sandstrom	Soldatna, Alaska	Visit
5-13-64	Ralph Samuelson and wife	Chatham, Michigan	Visit
5-13-64	Wally Gurkes and wife	Chatham, Michigan	Visit
5-14-64	Mrs. Opal Stewart, teacher	Munising, Michigan	Washington School, Munising
5-14-64	Mrs. Anne Rosenburg, teacher	Munising, Michigan	Washington School, Munising
5-14-64	George Butler, Driver	Munising, Michigan	Washington School, Munising
5-14-64	William French, Manager	Havana, Illinois	Chautauqua Nat'l Wildlife Refuge
5-15-64	Les Walstrom, Conservation Officer	Seney, Michigan	Michigan Conservation Department
5-15-64	Robert Ruohonen, Trooper	Munising, Michigan	Michigan State Police
5-15-64	John Mattson, Fire Officer	Grand Marais, Michigan	Michigan Conservation Department
5-15-64	Max Macauley	McMillan, Michigan	Visit - spreading lime on farms

<u>Date</u>	<u>Name and Title</u>	<u>Address</u>	<u>Representing</u>
5-18-64	Clair Rollings, Staff Specialist	Minneapolis, Minnesota	U. S. Fish and Wildlife Service
5-18-64	Lloyd Lindvall, GMA	Manistique, Michigan	U. S. Fish and Wildlife Service
5-18-64	Herbert Burton	Germfask, Michigan	Predator trapping
5-18-64	Fred Lorenz	Germfask, Michigan	Vehicle sale
5-19-64	E. W. Bastin	Hamilton, Ontario	Bird observations
5-19-64	Gerald Falls, Utilization Officer	Detroit 31, Michigan	Interagency Motor Pool Detroit GSA
5-19-64	I. Barry Tarshis, Doctor	Laurel Maryland	Patuxent Wildlife Research Center
5-19-64	Herbert Burton	Germfask, Michigan	Predator trapping
5-19-64	Harvey Nelson	Minneapolis, Minnesota	U. S. Fish and Wildlife Service
5-19-64	Herb Dill, Staff Specialist	Minneapolis, Minnesota	U. S. Fish and Wildlife Service
5-19-64	Dr. Jessop Low, Unit Leader	Logan, Utah	Utah State University
5-20-64	Lloyd Lindvall, GMA	Manistique, Michigan	U. S. Fish and Wildlife Service
5-20-64	Clyde Lambert, Conservation Officer	Manistique, Michigan	Michigan Conservation Department
5-20-64	Jack Raisanen, Engineer	Hancock, Michigan	Thornton Construction Company
5-20-64	Herbert Burton	Germfask, Michigan	Predator trapping
5-21-64	Joe Richey, Civil Engineer	Minneapolis, Minnesota	U. S. Fish and Wildlife Service
5-21-64	Jack Raisanen, Engineer	Hancock, Michigan	Thornton Construction Company
5-21-64	E. A. Donovan	Mobile, Alabama	Visit
5-21-64	John Winship, Pilot-Biologist	Minneapolis, Minnesota	U. S. Fish and Wildlife Service
5-21-64	Bill Aultfather, Regional Forester	Minneapolis, Minnesota	U. S. Fish and Wildlife Service
5-22-64	Harvey Saunders, Retired	Germfask, Michigan	Visit
5-22-64	Herb Burton,	Germfask, Michigan	Predator trapping
5-25-64	W. Weinert, Conservation officer	Strong's, Michigan	Michigan Conservation Department
5-25-64	Art Slaughter	Escanaba, Michigan	U. S. Geological Survey
5-26-64	Mrs. Whitmarch, teacher	Newberry, Michigan	Newberry Public Schools
5-26-64	Jean Piatt, Professor	Media Pennsylvania	University of Pennsylvania
5-26-64	William Stitt	Clewiston, Florida	Florida Audubon Society
5-27-64	Mac Frimodig	Marquette, Michigan	Michigan Conservation Department
5-27-64	Victor Haas, Director	Manistique, Michigan	Indian Lake State Park
5-27-64	Norma Carver, teacher	McMillan, Michigan	McMillan School
5-27-64	Donald Wertilla	McMillan, Michigan	McMillan School
5-28-64	Edward Trecker, Recreational Specialist	Minneapolis, Minnesota	U. S. Fish and Wildlife Service
5-28-64	Pat Trecker	Minneapolis, Minnesota	Visit
6-1-64	Frank Denome, Business Representative	Escanaba, Michigan	Operators Union
6-2-64	Joe Richey, Civil Engineer	Minneapolis, Minnesota	U. S. Fish and Wildlife Service
6-2-64	Ronald Wahlin, Inspector	Elmira, Michigan	U. S. Fish and Wildlife Service

<u>Date</u>	<u>Name and Title</u>	<u>Address</u>	<u>Representing</u>
6-2-64	Henry Ware, Sub-contractor	Barbeau, Michigan	Thornton Construction Company
6-3-64	Herbert Burton	Germfask, Michigan	Predator trapping
6-3-64	Basil Burns	Germfask, Michigan	Summer employment
6-4-64	Albert Boyd	Germfask, Michigan	Boyd Construction Company
6-5-64	Robert Jack	Germfask, Michigan	Jack's Blacktop Company
6-5-64	Herbert Burton	Germfask, Michigan	Predator trapping
6-6-64	Richard Lockwood	Bedford, Michigan	Remove hunting camp
6-8-64	Harvey Mattson	Grand Marais, Michigan	Summer employment
6-8-64	Basil Burns	Germfask, Michigan	Summer employment
6-8-64	Dr. I. Barry Tarshis	Laurel, Maryland	Patuxent Research Center
6-8-64	Dr. James Barrow	Hiram, Ohio	Ohio State Research Unit
6-8-64	David Rintamaa	Hiram, Ohio	Research studies
6-8-64	Alexander Lardis	Hiram, Ohio	Research studies
6-8-64	John Mattson, Fire Officer	Grand Marais, Michigan	Michigan Conservation Department
6-10-64	Paul Chailanein	Marquette, Michigan	Michigan Conservation Department
6-15-64	Roy McDowell	Seney, Michigan	Visit
6-16-64	Ronald Wahlin, Engineer	Elmira, Michigan	Jordan River Fish Hatchery
6-17-64	Uel Blank	East Lansing, Michigan	Michigan State University
6-17-64	Cameron Coe	Manistique, Michigan	Predator trapping
6-18-64	Frank Martin, Ass't Supervisor Refuges	Minneapolis, Minnesota	U. S. Fish and Wildlife Service
6-18-64	Carl Fermanich	Washington, D. C.	U. S. Fish and Wildlife Service
6-18-64	Mrs. Carl Fermanich	Washington, D. C.	Visit
6-18-64	Max Macaulay	McMillan, Michigan	Lime spreading
6-18-64	Frank Fenerou	Newberry, Michigan	Predator trapping
6-19-64	Dr. I. Barry Tarshis	Laurel, Maryland	Patuxent Research Center
6-21-64	Chuck Griffith, I & E Officer	Minneapolis, Minnesota	U. S. Fish and Wildlife Service
6-22-64	George Graff, Soil & Water Specialist	East Lansing, Michigan	Michigan State University
6-22-64	Charles Shick	East Lansing, Michigan	Michigan State University
6-22-64	Emmanuel VanNierop, Dept. Resource Dev.	East Lansing, Michigan	Michigan State University
6-23-64	B.A. Stephansky, Regional Supervisor	Marquette, Michigan	Michigan Conservation Department
6-23-64	William McClure, GMA	Mason, Michigan	U. S. Fish and Wildlife Service
6-23-64	Lloyd Lindvall, GMA	Manistique, Michigan	U. S. Fish and Wildlife Service
6-23-64	Herbert Burton	Germfask, Michigan	Predator trapping
6-23-64	Rex Beatle, Radio Engineer	Newberry, Michigan	Michigan Conservation Department
6-24-64	Les Walstrom, Conservation Officer	Seney, Michigan	Michigan Conservation Department
6-24-64	Loyd Schmenaurer, Game Biologist	Newberry, Michigan	Michigan Conservation Department

<u>Date</u>	<u>Name and Title</u>	<u>Address</u>	<u>Representing</u>
6-26-64	Dr. and Mrs. Kenneth Parkes	Pittsburg, Pennsylvania	Carnegie Museum
6-29-64	Les Walstrom, Conservation Officer	Seney, Michigan	Michigan Department of Conservation
6-29-64	Edward Voss, Doctor	Ann Arbor, Michigan	University of Michigan
6-29-64	Chester Laskowski	Ann Arbor, Michigan	University of Michigan
6-29-64	John Russell	Ann Arbor, Michigan	University of Michigan
6-30-64	Dr. Carlton Herman	Laurel, Maryland	Patuxent Research Center
7-1-64	Lloyd Lindvall, GMA	Manistique, Michigan	U. S. Fish and Wildlife Service
7-2-64	Ted Thompson, Field Aid	Escanaba, Michigan	U. S. Geological Survey
7-3-64	Bill Aho	Hancock, Michigan	Thornton Construction Company
7-5-64	Sergej Postupalsky	Warren, Michigan	Michigan Bald Eagle Association
7-7-64	Ronald Wahlin, Engineer	Elmira, Michigan	Jordan River Fish Hatchery
7-7-64	Lloyd Lindvall, GMA	Manistique, Michigan	U. S. Fish and Wildlife Service
7-8-64	Bill Hickling, Utilization Officer	Minneapolis, Minnesota	U. S. Fish and Wildlife Service
7-9-64	Mike Chubb, Graduate Student	East Lansing, Michigan	Michigan State University
7-9-64	Ronald Wahlin, Engineer	Elmira, Michigan	Jordan River Fish Hatchery
7-9-64	Lloyd Lindvall, GMA	Manistique, Michigan	U. S. Fish and Wildlife Service
7-13-64	Bob Johnson, Refuge Manager	Waubay, South Dakota	Waubay National Wildlife Refuge
7-13-64	C.W. Robertson, Dir. of Civil Defense	St. Ignace, Michigan	Group of Boy Scouts
7-14-64	William Sell	Pellston, Michigan	University of Michigan
7-14-64	James Tabe, Jr.	Pellston, Michigan	University of Michigan
7-14-64	Sergej Postropalsky	Pellston, Michigan	University of Michigan
7-14-64	Paul Hoitinga, Park Ranger	Newberry, Michigan	Tahquamenon Falls State Park
7-15-64	Dr. R.D. Van Deusen	Augusta, Michigan	Kellogg Bird Sanctuary, MSU
7-15-64	David Clark	East Lansing, Michigan	Michigan State University
7-15-64	R. M. Kocan	East Lansing, Michigan	Michigan State University
7-15-64	Joe Johnson	Kalamazoo, Michigan	Kellogg Bird Sanctuary, MSU
7-15-64	Guy Christensen, Engineer Draftsman	Minneapolis, Minnesota	U. S. Fish and Wildlife Service
7-19-64	Cordia Henry, Refuge Manager	Mosie, Montana	National Bison Range
7-20-64	Emerson Kemsies, Ornithologist	Cincinnati, Ohio	University of Cincinnati
7-20-64	John A Ruthven, Commercial Artist	Cincinnati, Ohio	University of Cincinnati
7-20-64	Robert Schwartz	Cincinnati, Ohio	University of Cincinnati
7-21-64	Ronald Wahlin, Engineer	Elmira, Michigan	Jordan River Fish Hatchery
7-21-64	Carl Hermanson, Engineer	Elmira, Michigan	Jordan River Fish Hatchery
7-21-64	John D. Umberger, Regional Engineer	Minneapolis, Minnesota	U. S. Fish and Wildlife Service
7-21-64	Kenneth Morrison, Branch of Hatcheries	Minneapolis, Minnesota	U. S. Fish and Wildlife Service
7-21-64	Kenneth Slader, Photographer	Hulbert, Michigan	Visit

<u>Date</u>	<u>Name and Title</u>	<u>Address</u>	<u>Representing</u>
7-21-64	Dean Rhoads, Extension Director	Manistique, Michigan	Schoolcraft County Extension Service
7-21-64	Grace Villwock, Home Economic Agent	Manistique, Michigan	Schoolcraft County Extension Service
7-21-64	Ciancarlo Lui	New York 14, New York	Hilary Harris Films, Inc.
7-21-64	Irene E. Harris	New York 14, New York	Hilary Harris Films, Inc.
7-22-64	Les Walstrom, Conservation Officer	Seney, Michigan	Michigan Conservation Department
7-22-64	John Lustila, Foreman	Germfask, Michigan	Schoolcraft County Road Commission
7-23-64	Jack Raisanen, Engineer	Hancock, Michigan	Thornton Construction Company
7-23-64	James Storey	Pickford, Michigan	Hydrotex Industries
7-25-64	Wendel J. Johnson	East Lansing, Michigan	Michigan State University
7-25-64	Ronald B. Willson	East Lansing, Michigan	Michigan State University
7-27-64	Chuck Griffith, I&E Officer	Minneapolis, Minnesota	U. S. Fish and Wildlife Service
7-27-64	Ed Trecker, Recreation Officer	Minneapolis, Minnesota	U. S. Fish and Wildlife Service
7-29-64	Bill Taylor, Wildlife Biologist	Escanaba, Michigan	U. S. Forest Service
7-29-64	Les Walstrom, Conservation Officer	Seney, Michigan	Michigan Conservation Department
7-30-64	William G. McClure, GMA	Mason, Michigan	U.S. Fish and Wildlife Service
8-3-64	Dr. I. Barry Tarshis	Laurel, Maryland	Patuxent Research Center
8-4-64	Harry Preiskorn	Germfask, Michigan	Cooperator farmer
8-4-64	Laverne Macaulay	Germfask, Michigan	Cooperator farmer
8-4-64	Owen Bennett, District Supervisor	Newberry, Michigan	Michigan Conservation Department
8-4-64	George Bruso, Ass't District Supervisor	Newberry, Michigan	Michigan Conservation Department
8-5-64	Robert E. Cleary, Supervisor	Lebanon, Ohio=	Branch of River Basin Studies
8-6-64	Robert M. McClung	Amhearst, Massachusetts	National Geographic Society
8-7-64	Floyd N. Robert	Munising, Michigan	U. S. Forest Service
8-11-64	Harvey Saunders, Retired USF&W	Germfask, Michigan	visit
8-11-64	Roy Smith	Germfask, Michigan	Employment
8-11-64	Stanley Baldwin, Field Aid	Lansing, Michigan	Weather Bureau
8-13-64	Rex Beatle, Radio Engineer	Newberry, Michigan	Michigan Department of Conservation
8-14-64	W.J. Hill, Clerk	Upham, North Dakota	Lower Souris Nat'l Wildlife Refuge
8-14-64	Les Walstrom, Conservation Officer	Seney, Michigan	Michigan Conservation Department
8-14-64	William G. McClure, G.M.A.	Mason, Michigan	U. S. Fish and Wildlife Service
8-17-64	William Aultfather, Regional Forester	Minneapolis, Minnesota	U. S. Fish and Wildlife Service
8-17-64	Dr. Harrison B. Tordoff	Ann Arbor, Michigan	University of Michigan
8-19-64	William Odgen	Ypsilanti, Michigan	Eastern Michigan University
8-21-64	Howard Hartmen, Jobber	Germfask, Michigan	Hartman Logging Company
8-25-64	Bud Spiroff	Ishpeming, Michigan	Armco Metal Products, Inc.
8-25-64	Carl F. Odgers	Washington, D. C.	U.S. Coast & Geodetic Survey

<u>Date</u>	<u>Name and Title</u>	<u>Address</u>	<u>Representing</u>
8-26-64	Ray Wright, Regional Engineer	Minneapolis, Minnesota	U. S. Fish and Wildlife Service
8-26-64	Ray Jensen, Regional Engineer	Minneapolis, Minnesota	U. S. Fish and Wildlife Service
8-26-64	Carl Hermanson, Engineer	Minneapolis, Minnesota	U. S. Fish and Wildlife Service
8-28-64	Robert Quinn, District Attorney	Grand Rapids, Michigan	U. S. Federal Courts
9-2-64	Loyd Schemenauer, Game Biologist	Newberry, Michigan	Michigan Conservation Department
9-2-64	Joseph Vogt, Biologist	Escanaba, Michigan	Michigan Conservation Department
9-3-64	Ernest Hall, Biologist	Shingleton, Michigan	Michigan Conservation Department
9-3-64	Jack Frye, Refuge Manager	Saginaw, Michigan	Shiawassee Nat'l Wildlife Refuge
9-9-64	Dr. I. Barry Tarshis	Laurel, Maryland	Patuxent Wildlife Research Center
9-10-64	Robert Strongs, Biologist	Sault Ste. Marie, Mich.	Michigan Conservation Department
9-10-64	Lloyd Lindvall, GMA	Manistique, Michigan	U. S. Fish and Wildlife Service
9-10-64	Carl F. Odgers	Washington, D.C.	U.S. Coast and Geodetic Survey
9-11-64	Bill Hopkins, Chief Naturalist	Detroit, Michigan	Huron-Clinton Metropolitan Authority
9-14-64	Jim & Virginia McKenna	Grand Rapids, Michigan	Motor News Magazine
9-15-64	Lloyd Lindvall, GMA	Manistique, Michigan	U.S. Fish and Wildlife Service
9-15-64	Lloyd Halstead, Green Bay, Wis	Green Bay, Wisconsin	Hurlbut Corporation
9-17-64	Ross Miller, Biologist	Madison, Wisconsin	U. S. Soil Conservation Service
9-17-64	Melville Cohee, Economist	Madison, Wisconsin	U. S. Soil Conservation Service
9-17-64	Lorenz Bredemeir	Madison, Wisconsin	U. S. Soil Conservation Service
9-19-64	Joe Bryant	Aurora, Ontario	Canadian Wildlife Service
9-19-64	Kenneth Krum	Battle Creek, Michigan	Krums Photographic Co.
9-19-64	R.D. Van Deusen, Kellogg Bird Sanc.	Augusta, Michigan	Michigan State University
9-19-64	Robert Tompkins	Battle Creek, Michigan	Visity
9-21-64	William Schmitz	Minneapolis, Minnesota	Branch of Fish Hatcheries
9-21-64	Ron Wahlin, Engineer	Elmira, Michigan	Jordan River Fish Hatchery
9-22-64	Vern Wilderzain, Wildlife Aid	Lansing, Michigan	Necedah Nat'l Wildlife Refuge
9-23-64	John Pryor, Watershed Mgt.	Gladstone, Michigan	U. S. Forest Service
9-23-64	Robert Radtke	Milwaukee, Wisconsin	U. S. Forest Service
9-23-64	David Hedrich, Watershed Mgt.	Milwaukee, Wisconsin	U. S. Forest Service
9-23-64	James Klatt, Engineer	Milwaukee, Wisconsin	U. S. Forest Service
9-23-64	Leonard Della-Moretts	Escanaba, Michigan	U. S. Forest Service
9-23-64	William Taylor, Biologist	Escanaba, Michigan	U. S. Forest Service
9-23-64	William McClure, GMA	Lansing, Michigan	U. S. Fish and Wildlife Service
9-23-64	Doug Swanson, Regional Enforcement	Minneapolis, Minnesota	U. S. Fish and Wildlife Service
9-24-64	Jay Kurrle, Surveyor	Detroit, Michigan	U. S. Army Corps of Engineers
9-24-64	Paul Bailey, Engineer	Detroit, Michigan	U. S. Army Corps of Engineers

<u>Date</u>	<u>Name and Title</u>	<u>Address</u>	<u>Representing</u>
9-25-64	Lloyd Lindvall, GMA	Manistique, Michigan	U. S. Fish and Wildlife Service
9-25-64	George Brusco, Ass't Dist. Supervisor	Newberry, Michigan	Michigan Conservation Department
9-25-64	Les Walstrom, Conservation Officer	Seney, Michigan	Michigan Conservation Department
9-26-64	Ellen Fenlon, Photographer	Hessel, Michigan	Photographic work
9-28-64	C.A. Gorhorn	Rainy River, Ontario	D. U. Canada
9-30-64	Ralph VonDane, GMA	Peoria, Illinois	U. S. Fish and Wildlife Service
9-30-64	Robert Myerding, GMA	Bay City, Michigan	U. S. Fish and Wildlife Service
9-30-64	William McClure, GMA	Lansing, Michigan	U. S. Fish and Wildlife Service
10-1-64	Les Walstrom, Conservation Officer	Seney, Michigan	Michigan Conservation Department
10-1-64	Charles Doonan	Escanaba, Michigan	U. S. Geological Survey
10-6-64	Dale Granger	Lansing, Michigan	Michigan Water Resources Comm.
10-6-64	Herb Miller	Lansing, Michigan	Michigan Conservation Department
10-6-64	Art J. Aanes	Lansing, Michigan	Michigan Conservation Department
10-6-64	Charles Gilbert	Lansing, Michigan	Michigan Water Resources Comm.
10-6-64	Fant Martin, Doctor	Laurel, Maryland	Patuxent Wildlife Research Center
10-6-64	Walter Neimi, Fire Officer	Seney, Michigan	Michigan Conservation Department
10-9-64	Eugene Howell, Mechanic	Augusta, Michigan	Kellogg Bird Sanctuary
10-9-64	Jim Anderson	Madison, Wisconsin	Visit
10-12-64	Robert Jack, Jobber	Germfask, Michigan	Bob Jack Blacktopping
10-13-64	Jack Buck, District Governor	White Pine, Michigan	Upper Peninsula Lion Clubs
10-13-64	James Smith	Germfask, Michigan	Shot local goose (return collar)
10-14-64	John Stratton, Adjuster	Green Bay, Wisconsin	Indemnity Benefit Plan Insurance
10-15-64	Ike Varty	Elmira, Michigan	Jordan River Fish Hatchery
10-19-64	Bill Laycock, District Biologist	Marquette, Michigan	Michigan Conservation Department
10-21-64	Loyd Schemenauer, Game Biologist	Newberry, Michigan	Michigan Conservation Department
10-21-64	David Wightman, Salesman	Peoria, Illinois	Caterpillar Tractor Co.
10-22-64	Frank Martin, Ass't Reg. Supervisor	Minneapolis, Minnesota	U. S. Fish and Wildlife Service
10-22-64	Loyd Schemenauer, Game Biologist	Newberry, Michigan	Michigan Conservation Department
10-22-64	Elmer Allen, Sales Representative	Traverse City, Michigan	Northern Extinguisher Service
10-22-64	James Barker	Germfask, Michigan	Upper Peninsula Power Co.
10-27-64	Dr. I. Barry Tarshis	Laurel, Maryland	Patuxent Wildlife Research Center
10-28-64	Joe Richey, Civil Engineer	Minneapolis, Minnesota	U. S. Fish and Wildlife Service
10-28-64	Ron Wahlin, Engineer	Elmira, Michigan	U. S. Fish and Wildlife Service
10-29-64	Robert Morin, Office Manager	Hancock, Michigan	Thornton Construction Co.
10-29-64	Les Walstrom, Conservation Officer	Seney, Michigan	Michigan Conservation Department
10-30-64	Lloyd Lindvall, GMA	Manistique, Michigan	U. S. Fish and Wildlife Service

<u>Date</u>	<u>Name and Title</u>	<u>Address</u>	<u>Representing</u>
11-9-64	Eldridge Harger, Biologist	Shingleton, Michigan	Michigan Conservation Department
11-9-64	Bill Dunmire, Chief Naturalist	Houghton, Michigan	Isle Royal National Park
11-9-64	Walt Niemi, Fire Officer	Seney, Michigan	Michigan Conservation Department
11-12-64	Robert Compeau, Game Officer	Newberry, Michigan	Michigan Conservation Department
11-18-64	John Beck, District Supervisor P&RC	Columbus, Ohio	U. S. Fish and Wildlife Service
11-18-64	Lloyd Lindvall, GMA	Manistique, Michigan	U. S. Fish and Wildlife Service
11-27-64	Dick St. Martin	Seney, Michigan	Standard Oil Company
11-30-64	Cameron N. Coe	Manistique, Michigan	Predator Trapper
12-1-64	Chuck Griffith, CE	Minneapolis, Minnesota	U. S. Fish and Wildlife Service
12-1-64	Ed. Trecker, Recreation Specialist	Minneapolis, Minnesota	U. S. Fish and Wildlife Service
12-1-64	Lloyd Lindvall, GMA	Manistique, Michigan	U. S. Fish and Wildlife Service
12-1-64	Loyd Schemenauer, Game Biologist	Newberry, Michigan	Michigan Conservation Department
12-2-64	Lloyd Lindvall, GMA	Manistique, Michigan	U. S. Fish and Wildlife Service
12-3-64	John Lustila, Foreman	Germfask, Michigan	Schoolcraft County Road Commission
12-10-64	Larry Hough	Escanaba, Michigan	U. S. Geological Survey
12-10-64	John Oberg	Escanaba, Michigan	U. S. Geological Survey
12-16-64	Leo R. Norton, Chief	Grand Marais, Michigan	U. S. Coast Guard
12-21-64	Earl Therriault, Sales Rep.	Escanaba, Michigan	Bark Rivert Culvert & Equipment Co.
12-28-64	Robert Jack	Germfask, Michigan	Jack's Blacktopping Co.
12-28-64	Gene Brow	Germfask, Michigan	Brow Construction Co.
12-28-64	Albert Boyd	Germfask, Michigan	Boyd Construction Co.
12-28-64	Clayton Livermore	Germfask, Michigan	Compensation Claim
12-29-64	Lloyd Lindvall, GMA	Manistique, Michigan	U. S. Fish and Wildlife Service
12-29-64	William McClure, GMA	Lansing, Michigan	U. S. Fish and Wildlife Service
12-31-64	John McLeod	Blaney Park, Michigan	In regarding accident

C. Refuge Participation

Following is a list of public contacts, conferences, etc.

<u>Date</u>	<u>Group Title</u>	<u>No. in Party</u>	<u>Personnel Involved</u>
01-21-64	Seney P.T.A.	25	Hakala
01-29-64	Seney School	50	Hakala
02-02-64 to	Regional Conference	200	Hakala
02-08-64	" "	Suich and Sherwood	
02-19-64	Mueller School	50	Suich
02-25-64	Michigan State University	80	Hakala
02-24-64	University of Michigan	40	Hakala
03-03-64	Manistique Lions Club	25	Suich
03-05-64 to	Charlevoix Communications Workshop	15	Hakala
03-06-64	" " "		Suich
03-09-64	Manistique Rotary Club	26	Suich
03-09-64	Seney 4-H Club	11	Sherwood
03-17-64	Germfask, P.T.A.	40	Hakala
04-09-64	Fire Ecology Conference	500+	Hakala
04-20-64	Stephenson High School	28	Suich
05-02-64	Schoolcraft Co. Teachers Assoc.	25	Hakala
05-06-64	Garden Township School	31	Suich-Doran
05-13-64	Burt Township School Grand Marais	17	Suich
05-14-64	Munising School (Elementary)	61	Doran
05-20-64	Munising School (High)	65	Suich
05-21-64	Rock High School	31	Suich
05-25-64	Hulbert School	30	Suich-Doran
05-26-64	Newberry School (5th grade)	35	Suich
05-27-64	McMillan School	25	Doran
06-10-64	North Branch School 9-11th grade	13	Doran
06-15-64	4-H group at Clear Lake	72	Hakala
06-19-64	4-H group at Clear Lake	83	Hakala
06-26-64	4-H group Chatham	54	Sherwood
06-26-64	4-H group Chatham	57	Suich
06-26-64	4-H group Chatham	41	Halladay
06-26-64	4-H group Chatham	48	Goeke
07-09-64	Foresters (Mich. State U.)	17	Sherwood - Halladay
07-23-64	Wildlifers (U. of Mich.)	19	Sherwood - Halladay
07-31-64	Manakiki Bible Camp	31	Goeke
08-19-64	Eastern Michigan U. (Teachers)	21	Hakala
09-23-64	U.S. Forest Service	6	Sherwood
08-23-64 to	Agassiz Banding Workshop	50	Hakala
08-25-64	" " "		Sherwood
09-25-64	Engadine School 4-5-6 grades	75	Halladay
10-27-64	Senior Citizens of Manistique	40	Hakala
11-07-64	Michigan Bird Banders Assoc.	50	Sherwood
11-07-64	Michigan Technological U.	200	Hakala
12-22-64	Schoolcraft Co. Board of Super- visors	25	Hakala

H. Hunting

Approximately 90% of the refuge was open to deer hunting, by rifle only. The portion of the refuge west of the Driggs River was again open to camping during the hunting season.

Opening hunting pressure was considerably less than it was last year. Even though highway M-77 again divided Upper Michigan into areas with separate opening dates, there was only one days difference between opening west of M-77 and opening to the east. This difference was not great enough to attract hunters from Lower Michigan. Opening day pressure was 1,650 hunters with 51 deer of either sex being taken. In 1963 there were 2,500 hunters the first day. Total hunting pressure for 1964 was 2,836 hunters taking an estimated 170 deer, about 1/3 of which were antlerless. The early part of the season was mild. Snow and cold weather came 6 days after season opened.

Waterfowl hunting is not permitted on the refuge. There was an average number of ducks in the surrounding area and early hunting was fair, but they soon "learned" to stay within the refuge. Approximately 275 geese were taken at the farms surrounding the refuge. Fifty per cent were taken well after season opened, as the geese which held over began flying out from the refuge again as forage decreased in refuge grazing units.

Upland game hunting was up to par on lands bordering the refuge, with populations equal to other years. Opening weekend saw fair pressure on the Sharp-tailed Grouse in the State land north of the refuge, but little pressure after that. Woodcock shooting didn't last long as an early snow storm and cold weather in October drove them southward.

E. Violations

The ever present problem of man and his wanton lawlessness hasn't improved.

On August 30 we received a report of someone fishing illegally in Unit I. Upon investigation three men were apprehended in a closed area on the road along F-1 Pool. They did not possess fishing Equipment and claimed to be sight-seeing. They were charged with trespassing and the case was turned over to GMA Meyerding.

On October 1, John W. Shepherd was apprehended by Biologist Sherwood and Assistant Manager Halladay at the John Zellar farm as he was picking up 2 black ducks which he had just illegally shot. The case was turned over to Michigan State Conservation Officer Leslie Walstrom. The defendant was fined \$25.00 and \$7.30 costs.

On November 13 at 9:15 P.M. a party of hunters was pursued and apprehended after they had fired a rifle at the Chicago Farm field. They were charged with illegal carrying and firing of fire arms, resisting an officer and speeding. The case was turned over to GMA Lindvall.

On November 15 a hunting party was apprehended for taking their jeep down the Walsh road which was closed to motorized vehicles. The case was turned over to GMA Lindvall.

While on routine patrol on November 23 a hunting party was checked as they drove out from a woods road to the Chicago Farm road. All rifles were encased, but one retained a single round in the chamber. The case was turned over to GMA Lindvall.

A number of other violations occurred where warnings were given including camping in closed area, littering, speeding in the refuge and carrying guns in the car without having them encased or broken down.

Three instances of malicious behavior occurred. The lock on the Walsh road gate was smashed, the spillway gate at the Upper Goose Pen Pool was raised allowing the pool to be drained and one of the signs directing the public to the Driggs picnic area was stolen.

F. Safety

Safety meetings were held each month. A listing of the discussion leaders and topics covered follows:

<u>Month</u>	<u>Topic</u>	<u>Discussion Leader</u>
January	Safety in the home	Sherwood
February	General Safety - be alert for hazards!	Suich
March	Safe Driving and Tool Use	Orlich
April	General Safety - clothing, tools, etc.	Hakala
May	Water Safety	Anderson
June	Equipment Safety	Losey
July	Fire Fighting Safety Farming Safety	Hakala Schrock
August	Safety in the woods	Collins
September	Gun Safety	Doran

<u>Month</u>	<u>Topic</u>	<u>Discussion Leader</u>
October	Winter Driving Safety	Halladay
November	Electrical Equipment Safety	Orlich
December	Review of all accidents occurring over the past year.	Sherwood

At the close of the period the station safety record was 149 days without a lost-time accident. The previous record of 349 days was broken when research assistant David Rintamaa suffered torn ligaments while hiking to a forest fire.

Several other accidents occurred during this period. Peter Suich suffered torn ligaments resulting from a bag of fertilizer falling against his leg.

The crane used by H.J. Ware, sub-contractor for Thornton Construction Company of Hancock, Michigan became overbalanced and dropped into the creek while building Pine Creek bridge. The operator, William Ferron, received only slight head lacerations.

While Herbert Musselman was traveling toward sub-headquarters on highway M-77 a cedar post rolled from the lowboy into the path of an oncoming car driven by Marie McLeod. Mrs. McLeod received injuries to her neck and spine resulting from the impact of ramming the timber.

Herbert Musselman was struck in the eye with a twig as he was working in brush with the TD-14 crawler tractor. His eye was sore and blood-shot for a few days.

Glen Losey had the misfortune of rolling the Dodge stake truck over while returning from Marquette with a load of oil on slippery roads. Miraculously he was uninjured in this mishap.

A delivery van from the Soo Creamery collided into the rear of the Chevrolet 4x4 pickup while Manager Hakala was driving it on highway M-28. The road had been sanded, but was still quite slippery. Reginald Long, driver of the van, was not injured. Manager Hakala received a broken nose.

All old fire extinguishers were hydrostatically tested, checked for operability and restamped with new dates. Those needing it were recharged and several new extinguishers were obtained, both for replacement and for placing in the visitor center.

Mr. Elmer Allen from the Northern Fire Extinguisher Service, Inc. at Traverse City, Michigan demonstrated the use of the various types of fire extinguishers. He also demonstrated the use of a mechanical resuscitator.

An inspection was made to check against any potential fire hazard during fire prevention week. Chimneys were cleaned and examined, furnaces were checked and repaired and a new stove pipe was put up in the carpenter shop. The electrical wiring was checked in the boat and pump houses. Dust and dirt were cleaned up in the grainery and sawdust and scrap wood were cleaned up in the carpenter shop.

VII. OTHER ITEMS

A. Items of Interest

1. Personnel

On January 23-31 nineteen men were recalled to finish up an Accelerated Public Works Project. The men cleared islands, dikes and shoreline in and around I-1 Pool. This work only lasted 8 days but the men gave up their unemployment compensation for this period and performed excellent work.

Glen C. Losey entered on duty as maintenance man on April 7, 1964. He fills the position vacated by Axel N. Mortensen who retired on October 31, 1963. Glen, a native of Germfask, Michigan, is a graduate of Manistique High School and served with the U.S. Army as a clerk in Germany from 1945-47. He is a very quiet and industrious worker. We are happy to add him to our staff. Glen was employed by the refuge as a foreman during both Accelerated Public Works Programs. He also worked for the refuge at various periods since 1950. Glen and his wife Celia reside in Germfask and have two sons, Noel and Stephen.

Orlynn J. Halladay of Salem, Wisconsin entered on duty as Wildlife Aid on June 1. He was in charge of the visitor center and public relations. Joe, as he prefers everyone to call him, played a major roll in setting up the displays and exhibits. He attended high school in Wilmot, Wisconsin and received his Bachelor's and Master's Degree in Wildlife Management at the University of Michigan, Ann Arbor. He served with the U.S. Army as a stock record clerk in Korea from 1955-57. Joe worked until September 13 as a Wildlife Aid, when he accepted a career-conditional appointment as Assistant Refuge Manager Trainee. Joe will still be in charge of the visitor center this coming year and will handle public visitation, tours and nature interpretation. He now resides on the refuge in Quarters No. 137 with his wife Bethel and son Timmy. We are happy to add Joe to our staff of permanent employees.

Peter S. Suich, Wildlife Biologist (Assistant Manager) transferred to Lake Andes Refuge, Lake Andes, South Dakota on July 1 to assume his new duties as Refuge Manager. Pete served as Assistant Refuge Manager at Seney from January 1962 until his transfer.

David E. Goeke, a student from Western Illinois University, was our summer assistant. He handled a variety of jobs from tour leader to lawn mowing and from duck banding to garbage removal. Dave carried out his work in an excellent manner. The refuge staff was sorry to see him depart on September 7. He returned to Western Illinois to begin graduate work in wildlife management.

David L. Rintamaa was Patuxent's student assistant at Seney on the blackfly study. Dave is a student at Hiram College in Ohio. He, too, was a hard working, congenial individual. The two Daves roomed together in the student cabin.

Dr. I. Barry Tarshis, Patuxent Entomologist, carried out much of the field work on the blackfly study and directed Rintamaa's activities. Barry was at Seney at frequent intervals throughout the summer and fall. He worked diligently from morning to night.

2. Fish Plantings

Northern pike removed from the refuge pools by the Michigan Department of Conservation were distributed widely through this section of Michigan. Below is a listing of releases made in nearby counties.

<u>Location</u>		<u>Weight</u>	<u>Number</u>
Betcher's Marsh	Chippewa County Sec. 34, T44N, R6W	13	25
Dana Lake	Delta County Sec. 43, T24N, R19W	100	200
Brevort Lake	Mackinac County Sec. 36, T42N, R5W	30	60
Satago Lake	Sec. 36, T42N, R4W	100	200
Hermansville Pond	Menominee County Sec. 38, T2N, R27W	200	200
Macaulay Marsh	Luce County Sec. 20, T45N, R11W	60	120
Wiskin Marsh	Sec. 23, T45N, R12W	12	23
Seney Refuge Show Pools	Schoolcraft County Sec. 16, T45N, R13W	270	180

In addition to the northern pike, 400 yellow-perch were released in the Show Pools. These pools are our most popular public fishing area.

3. Flowers

William G. Anderson, one of Seney's alert maintenancemen, spotted a strange flower near the site of the new Pine Creek bridge on May 22.

He brought a portion of the plant in. It was identified by Suich, and later confirmed by Dr. Edward Voss of the University of Michigan Herbarium, as a Purple Virgin's Bower, Clematis verticillaris. The plant, a vine type, is quite rare in the Upper Peninsula.

4. Volunteer Workers - Refuge Wives

Refuge wives, Mae Hakala, Bethel Halladay and JoAnn Sherwood were frequently called on for help in 1964. They willingly put in countless hours inscribing and painting numbers on the goose collars. Mae and JoAnn helped on all of the banding operations while Bethel made it possible for JoAnn to help by taking care of the two Sherwood boys. They removed geese from the net, placed collars, recorded data and didn't complain when they were occasionally splattered with loose, goose droppings. Mae and JoAnn also mounted a large number of Aquatic plants for the refuge herbarium, and recorded numerous observations of geese. All three wives helped out with the typing of reports and papers from time to time to ease the load on Clerk Doran. They deserve abundant praise for all their efforts.

Credits:

Doran - - - Sections I-A, VI-B and C, VII, typing, photo mounting and assembly.

Hakala - - - Editing

Halladay - - Sections III, IV, VI-A,D,E,F


Sherwood - - Sections I-B, II, V, VII, Photo printing and captions.

Photographs:

Each photograph is marked as to the photographer and date photo was taken. The refuge Minolta Autocord camera was used.

SIGNATURE PAGE

Submitted by:


(Signature)
John B. Hakala
Refuge Manager

Date: February 4, 1965

Title

Approved, Regional Office:

Date: 2/11/65

(Signature) Frank B. Martus

Asst.
Regional Refuge Supervisor

3-1750
Form NR-1
(Rev. March 1953)

W A T E R F O W L

REFUGE Seney

MONTHS OF September TO December, 19 64

(1) Species	(2) Weeks of reporting period									
	9/1-8 1	9/9-15 2	9/16-22 3	9/23-29 4	9/30-10/6 5	10/7-13 6	10/14-20 7	10/21-27 8	10/28-11/3 9	11/4-10 10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	800	800	1,200	3,000	5,000	6,000	5,800	5,200	5,200	5,000
Cackling										
Brant										
White-fronted										
Snow					200	1,000	225			
Blue					400	600	325			
Other										
Ducks:										
Mallard	425	425	1,000	1,000	1,000	1,000	900	500	600	500
Black	500	500	900	1,000	1,000	1,000	1,000	850	900	900
Gadwall										
Baldpate	200	200	400	600	800	800	200	100	100	50
Pintail	10	10	10	10	10	15	15	10	10	
Green-winged teal	50	50	150	150	300	250	250	150	200	150
Blue-winged teal	400	400	500	500	250	100	40			
Cinnamon teal										
Shoveler										
Wood	200	200	450	450	300	100	80			
Redhead							10			
Ring-necked	400	400	900	3,000	3,200	3,200	3,000	700	1,400	800
Canvasback										
Scaup					20	50	50	20	20	250
Goldeneye	3	3	1	10	10	10	10	30	40	50
Bufflehead							10	50	80	100
Ruddy										
Other										
Hooded Merganser	100	100	100	100	60	40	40	40	150	150
Common Merganser	50	50	50	50	70	80	90	120	140	100
Coot			25	25	30	25	20	20		

3 -1750a

Cont. NR-1

(Rev. March 1953)

W A T E R F O W L
(Continuation Sheet)

REFUGE SeneyMONTHS OF September TO December, 1964

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen : total
	11/11-17: 11	11/18-24: 12	11/25-12/1: 13	12/2-8: 14	12/9-15: 15	12/16-22: 16	12/23-29: 17	12/30-31: 18		
Swans:										
Whistling	20	5							175	
Trumpeter										
Geese:										
Canada	4,400	3,000	300						319,900	
Cackling										
Brant										
White-fronted										
Snow									5,775	
Blue									9,275	
Other										
Ducks:										
Mallard	500	60							53,370	
Black	1,000	100	30						67,760	
Gadwall										
Baldpate	50								24,500	
Pintail									700	
Green-winged teal	150								12,950	
Blue-winged teal									15,330	
Cinnamon teal										
Shoveler										
Wood									12,460	
Redhead									70	
Ring-necked	800								124,600	
Canvasback										
Scaup	250								4,620	
Goldeneye	50								1,519	
Bufflehead	100								2,380	
Ruddy										
Other										
Hooded Merganser	150								7,210	
Common Merganser	100	20							6,440	
Coot:									1,015	

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	175	21	
Geese	334,950	7,000	
Ducks	333,909	7,020	
Coots	1,015	30	

SUMMARY

Geese: Diversion Field, Sub-Hdqs.
Principal feeding areas Field, Chicago Farm, E-1, R-1, B-1,
and C-3 Pools. Ducks: B-1, C-1, G-1, F-1, H-1, I-1, and C-3
Pools.

Principal nesting areas _____

Reported by _____

Glen A. Sherwood
Glen A. Sherwood
Wildlife Biologist (Mgm't.)

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

3-1751

Form NR-1A

(Nov. 1945)

MIGRATORY BIRDS

(other than waterfowl)

Refuge.....Seney..... Months of September to December 1964

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. <u>Water and Marsh Birds:</u>										
Common Loon	Summer	Resident			2 Imm.	10/14				35
Pied-billed Grebe	Summer	Resident			3	10/14				60
Horned Grebe	2	9/10			1	9/18				10
American Bittern	Summer	Resident			2	10/15				100
Great Blue Heron	Summer	Resident			1	11/8				100
Sandhill Crane	Summer	Resident			4	10/14				90
Sora Rail	Summer	Resident	(Not observed this period)							50
Virginia Rail	Summer	Resident	(Not observed this period)							30
II. <u>Shorebirds, Gulls and Terns:</u>										
Woodcock	Summer	Resident	2,500	9/20-10/5	1	10/10				3,000
Common Snipe	Summer	Resident	250	10/1 - 30	1	11/13				300
Greater Yellowlegs	Summer	Resident	200	9/20 - 30	2	10/14				200
Killdeer	Summer	Resident								60
Spotted Sandpiper	Summer	Resident								200
Solitary Sandpiper	Summer	Resident								40

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u> Mourning dove White-winged dove					
IV. <u>Predaceous Birds:</u> Golden eagle Duck hawk Horned owl Magnolia Snowy Owl Raven Crow Marsh Hawk Rough-leg Hawk Goshawk Bald Eagle	Resident 1 10/23 Resident Summer Resident Summer Resident 3 11/2 1 11/20 Summer Resident	30 2 60 200 3 1 9	11/13 9/1-30 11/2 11/20	2 6 2 1 1	11/13 12/23 12/31 11/2 11/20 12/22
					30 6 60 300 60 25 2 9
Reported by <i>Glen A. Sherwood</i>					

INSTRUCTIONS

Glen A. Sherwood

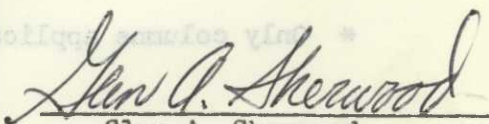
Wildlife Biologist (Mgm't)

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge Seney Months of September to December, 1964

(1) Species	(2) Density	(3) Young Produced	(4) Sex Ratio	(5) Removals	(6) Total	(7) Remarks	
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd. Estimated Total	Percentage	Hunting For Re- stocking For Research	Estimated number using Refuge	Pertinent information not specificoically requested. List introductions here.
Spruce Grouse	Spruce-cedar forest, 5,000 acres	40			0 0 0	125	Incidental observations
Ruffed Grouse	Upland Pine, Hard- wood and swamp edge. 30,000 acres	20			0 0 0	1500	Incidental observations
Sharp-tailed Grouse	Brushland, open ground, farm units, roads and dikes 10,000 acres	40			0 0 0	200	Incidental observations
<div> Glen A. Sherwood Wildlife Biologist (Mgm't)</div>							

Glen A. Sherwood
Glen A. Sherwood
Wildlife Biologist (Mgm't)

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- (1) SPECIES: Use correct common name.
- (2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
- (4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
- (5) REMOVALS: Indicate total number in each category removed during the report period.
- (6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
- (7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1753
Form NR-3
(June 1945)

BIG GAME

Refuge Seney

Calendar Year 1964

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions	(7) Estimated Total Refuge Population		(8) Sex Ratio
			Hunting	For Re- stocking	Sold	For Research	Predation	Disease	Winter Loss		At period of Greatest use	As of Dec. 31	
Common Name	Cover types, total Acreage of Habitat	Number								Number	Source		
White-tailed Deer	Variable - marshland, hardwoods, coniferous forests, brushland and open ground - 80,000 acres	U	160	0	0	0	U	U	0	0		2,500 *	0
Black Bear	" "	U	0	0	0	0	U	U	U	0		12	12

Remarks: * Based on deer drives conducted on two areas by Refuge and Michigan Conservation Department Personnel on October 20, 1964

Reported by

Glen A. Sherwood
Glen A. Sherwood, Wildlife Biologist (Mgt)

INSTRUCTIONS

Form NR-3 - BIG GAME

- (1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.
- (2) DENSITY: Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge: once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated total number of young produced on refuge.
- (4) REMOVALS: Indicate total number in each category removed during the year.
- (5) LOSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.
- (6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.
- (7) TOTAL REFUGE POPULATION: Give the estimated population of each species on the refuge at period of its greatest abundance and also as of Dec. 31.
- (8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals.

3-1755

Form NR-5
60701

DISEASE

Refuge SeneyYear 1964

Botulism

Period of outbreak _____

Period of heaviest losses _____

Losses:

	Actual Count	Estimated
(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Number Hospitalized	No. Recovered	% Recovered
(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Areas affected (location and approximate acreage) _____

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.) _____

Condition of vegetation and invertebrate life _____

Remarks _____

Lead Poisoning or other Disease

Kind of disease Leucocytozoon (probable)Species affected Canada Goose

Number Affected Species	Actual Count	Estimated
_____	_____	_____
_____	_____	_____
_____	_____	_____

Number Recovered 18 (dead)Number lost 500

Source of infection _____

Water conditions NormalFood conditions GoodRemarks A complete account of the loss has been written up in the 1964 progress report of Seney Project 1.*Glen A. Sherwood*Glen A. Sherwood
Wildlife Biologist (Mgm't)

PUBLIC RELATIONS

(See Instructions on Reverse Side)

Refuge SeneyCalendar Year 1964

1. Visits

a. Hunting 2,836 b. Fishing 6,860 c. Miscellaneous 70,304 d. TOTAL VISITS 80,000

1a. Hunting (on refuge lands)

TYPE	HUNTERS	ACRES	MANAGED BY
Waterfowl	none		
Upland Game	none		
Big Game	2,836	87,000	
Other	none		

Number of permanent blinds noneMan-days of bow hunting included above noneEstimated man-days of hunting on lands adjacent to
refuge 4,500

1b. Fishing (area open to fishing on refuge lands)

TYPE OF AREA	ACRES	MILES
Ponds or Lakes	759	
Streams and Shores		21

1c. Miscellaneous Visits

Recreation 74,800 Official 3,500
 Economic Use 1,700 Industrial none

2. Refuge Participation (groups)

TYPE OF ORGANIZATION	On Refuge		Off Refuge	
	NO. OF GROUPS	NUMBER IN GROUPS	NO. OF GROUPS	NUMBER IN GROUPS
Sportsmen Clubs				
Bird and Garden Clubs				
Schools	14	468	7	310
Service Clubs			3	91
Youth Groups	4	200	3	166
Professional-Scientific			3	750
Religious Groups	1	31		
State or Federal Govt.	1	6	3	265
Other			1	25

3. Other Activities

TYPE	NUMBER	TYPE	NUMBER
Press Releases	25	Radio Presentations	4
Newspapers (P.R.'s sent to)	11	Exhibits	
TV Presentations	3	Est. Exhibit Viewers	

3-1757
Form NR-7
(April 1946)

PLANTINGS
(Marsh - Aquatic - Upland)

Refuge Seney Year 1965

Species	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount & Nature of Propagules	Date of Plant- ing	Survival	Cause of Loss	Remarks
	<u>None this period</u>							

TOTAL ACREAGE PLANTED:

Marsh and aquatic.....
Hedgerows, cover patches.....
Food strips, food patches.....
Forest plantings.....

3-1758
Form NR-8
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Seney County Schoolcraft State Michigan

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water- fowl Browsing Crops Type and Kind	Total Acreage
	Acres	Bu./Tons	Harvested		Unharvested				
			Acres	Bu./Tons	Acres	Bu./Tons			
Buckwheat	17	850			40	800	40	Winter Rye	83
Oats					86	2,460	103	(10 tons of graze forage)	
Winter Rye					95	240	95		
New seeding (Alfalfa, Clover, Brome)								45	Alfalfa, Clover, Brome - (25 tons of graze forage)
								Fallow Ag. Land 12 acres Chicago Farm 50 acres Diversion Unit	62

No. of Permittees: Agricultural Operations 1 Haying Operations 1 Grazing Operations none

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
Alfalfa, Clover, Brome	171	140		1. Cattle	none			
				2. Other	none			
				1. Total Refuge Acreage Under Cultivation				440
Hay - Wild	12			2. Acreage Cultivated as Service Operation Includes fallow land listed above.				240

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

REFUGE GRAIN REPORT

Refuge Seney

Months of January through December, 195 65

(1) VARIETY*	(2) ON HAND BEGINNING OF PERIOD	(3) RECEIVED DURING PERIOD	(4) TOTAL	(5) GRAIN DISPOSED OF				(6) ON HAND END OF PERIOD	(7) PROPOSED OR SUITABLE USE*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Yellow Corn	150 Bu.	512 Bu.	662 Bu.			209 Bu.	209 Bu.	453 Bu.		453 Bu.	
Barley	0 "	50 "	50 "			50 "	50 "	0 "			
Rodney Oats	0 "	18 "	18 "		17 Bu.		17 "	1 "	1 Bu.		
Garry Oats	0 "	47 "	47 "		47 "		47 "	0 "			
Winter Rye	0 "	184 "	184 "		151 "		151 "	33 "	33 "		

(8) Indicate shipping or collection points _____

(9) Grain is stored at Granary in Stone Building and metal grain bins.

(10) Remarks Condition good.

*See instructions on back.

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

- (1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR-9.
- (3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.
- (4) A total of columns 2 and 3.
- (6) Column 4 less column 5.
- (7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.
- (8) Nearest railroad station for shipping and receiving.
- (9) Where stored on refuge: "Headquarters granary," etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

3-1759
Form NR-9
(April 1946)

COLLECTIONS AND RECEIPTS OF PLANTING STOCK
(Seeds, rootstocks, trees, shrubs)

Refuge Seney

Year 19565

Species	Collections				Receipts		Total Amounts on Hand	Amount Surplus
	Amount	Date or Period of Collection	Method	Unit Cost	Amount	Source		
	<u>None this period</u>							

PEST PLANT CONTROL REPORT

Seney

Refuge, Calendar Year 1964

(To be inserted in the September-December Narrative Report.)

Plot No.	Acres	Species Treated	Growth Stage	Date of Treat.	Chem. or Method Used	Dilut. or Carrier	Rate Per Acre	Water Depth	Material	Labor	Equipment	Total	Per Acre	% Kill last Observ.	Date last Observ.
				None this period											

INSTRUCTIONS ON REVERSE SIDE

Additional forms will be supplied by Regional Office upon request.

Remarks: Include any important information not given in above columns, including No. of years an area has been treated where repeated treatments have been made.

INSTRUCTIONS

1. Plot No: Number used to identify the area of infestation in the field and on maps.
2. Acres: Use decimals, not fractions.
3. Species Treated: Use common and scientific names. LIST ONE SPECIES - THE PRIMARY ONE.
4. Growth Stage: i.e., Bud, half leaf, full leaf, early flower, full flower, etc.
5. Date of Treatment: Dates applications were made, using a separate line for each area treated. If more than one treatment is made on the same area during the summer, a separate line is used for each application.
6. Chemical or Method Used: Show type of herbicide; i.e., 2,4-D ester, etc., also mechanical methods (mowing, plowing, burning etc.)
7. Diluent or Carrier: Show diluent or carrier used plus stickers, spreaders, etc.
8. Rate Per Acre: Give lbs. acid equivalent per acre - not lbs. of herbicide or total mix. Check the label for % of acid equivalent.
9. Water Depth: Give depth in inches.
10. Cost, Material: Include herbicide and carrier.
11. Cost, Labor: Take from Application form.
12. Cost, Equipment: Take from Application form.
13. Total Cost: Take from Application form.
14. Cost per Acre: Take from Application form.
15. % Kill: Show percent dead plants with no regrowth showing at last observation.
16. Date Last Observation: Last date plants were checked following mechanical treatment or application of herbicide. If the same area is treated more than once during the same season, a new entry should be made on a separate line for each separate treatment. If the same area has been treated for several years, this should be shown in the space for remarks, giving the number of years the area has been treated.

TIMBER REMOVAL

Refuge Seney Year 19465

Permittee	Permit No.	Unit or Location	Acreage	No. of Units Expressed in B. F., ties, etc.	Rate of Charge	Total Income	Reservations and/or Diameter Limits	Species Cut
Andrew Swisher	34908	Sec. 9 T44N R13W		4 cords	0.50/cord	2.00	Firewood - dead and down timber	Sugar maple Yellow birch

Total acreage cut over..... Total income 2.00

No. of units removed B. F. Method of slash disposal.....

Cords 4

Ties.....

.....

3-1979 (NR-12)
(9/63)

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PERSTICIDE APPLICATION

Refuge

Seney

Proposal Number

Reporting Year
1964

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		None this period						

10. Summary of results (continue on reverse side, if necessary)

Fig. 2. Seney Refuge headquarters and tower.

June 11, 1964

R 47-12

Sherwood



Fig. 3. I-1 Pool, beyond dike, prior to the island construction program.

October 26, 1963

Personal Photo
Lucille Anderson



Fig. 4. Habitat improvement work on I-1 Pool. Photo shows Orlich in TD-14 removing the old spoil bank that served as predator access into the pool.

January 9, 1964

R 33-7

Sherwood

Fig. 5. Habitat improvement work on I-1 Pool. Here "cats" have split one of the larger islands and are pushing up a new one. Orlich and Anderson are the operators.

January 21, 1964

R 34-5

Sherwood

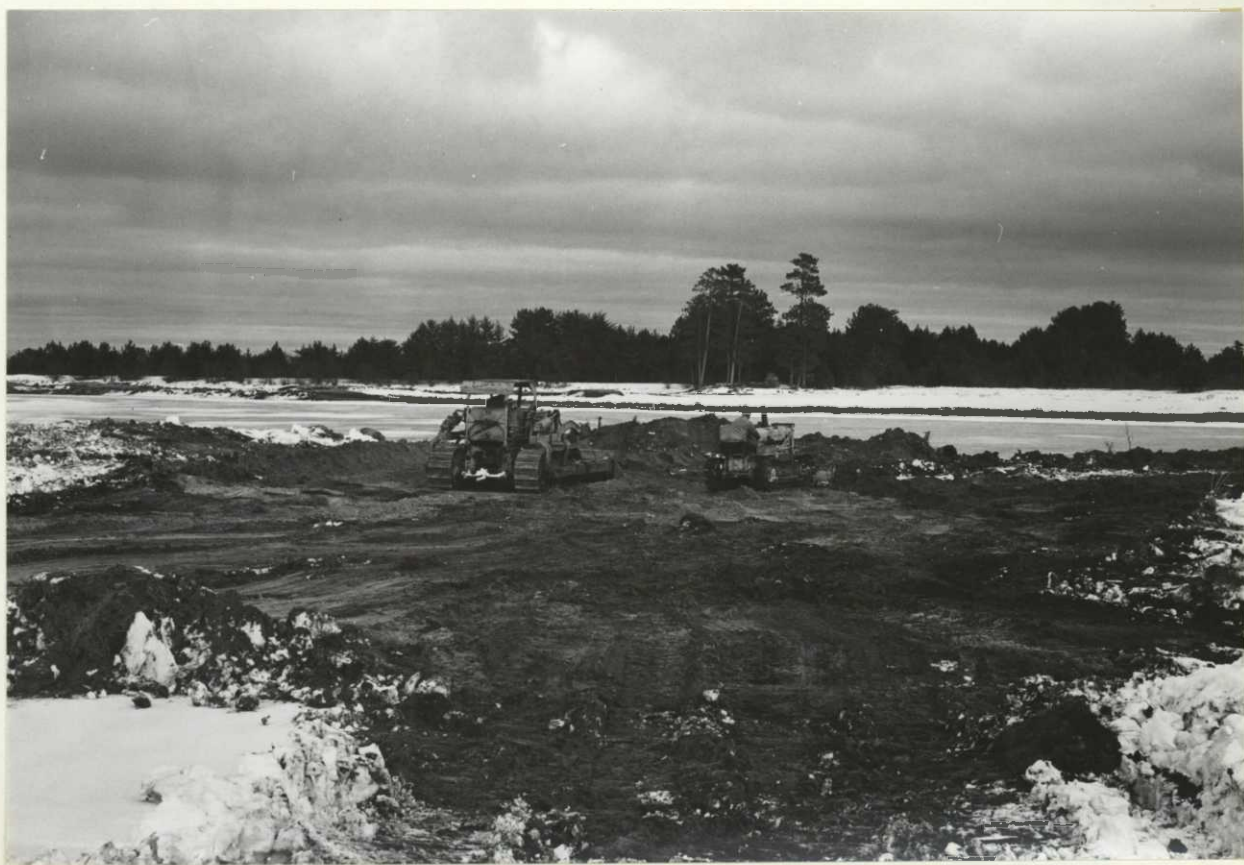


Fig. 6. Four new islands pushed up from the old large
"Z"-shaped island on I-1 Pool.

January 30, 1964

R 36-7

Sherwood

Fig. 7. The refuge Ski-Doo was used to haul hay bales
to the new islands. Swisher (L.) and Suich.

January 31, 1964

R 37-9

Sherwood



Fig. 8. Habitat improvement. Tag alder removal along
I-1 Pool shoreline. Losey (L.) and Rupright.

January 31, 1964

R 36-12

Sherwood

Fig. 9. Habitat improvement. Jack pine removal around
I-1 Pool. Fitzpatrick on John Deere with
loader.

January 27, 1964

R 35-5

Suich



Fig. 10. Additional island construction work was carried on in July on I-1 Pool. Here an island is being pushed up by Musselman on the TD-14.

July 20, 1964

R 51-11

Sherwood

Fig. 11. A dragline on mats was used to construct islands in areas too soft for the "cats" to work. The photo shows three completed islands and the dragline "matting" to another site.

July 20, 1964

R 52-1

Sherwood

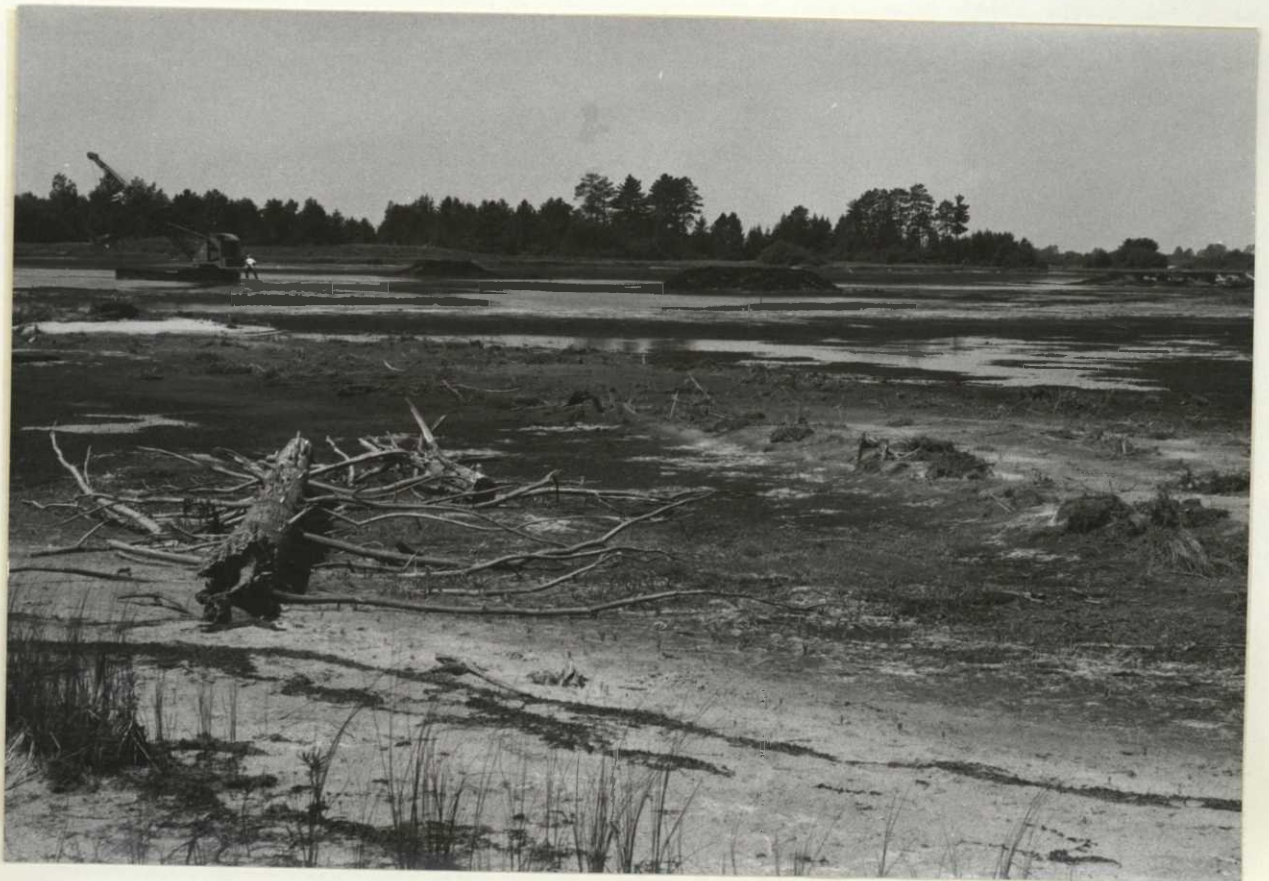


Fig. 12. I-1 Pool following completion of the island construction program. Island size and spacing can be noted.

August 20, 1964

R 53-12

Goeke



Fig. 13. Timber stand improvement work in 1964.
Beloungea on truck.

January 27, 1964

R 35-3

Suich

Fig. 14. Pile driving to repair washout of the A-1
stilling basin.

January 24, 1964

R 36-4

Suich



Fig. 15. New piling in place at the A-1 stilling basin. Gravel later was pushed into the gap between the piling to form a broad, shallow apron.

February 13, 1964

R 38-7

Suich

Fig. 16. Later, steel sheet piling was placed to complete the work at the troublesome A-1 stilling basin.

June 17, 1964

R 48-7

Suich

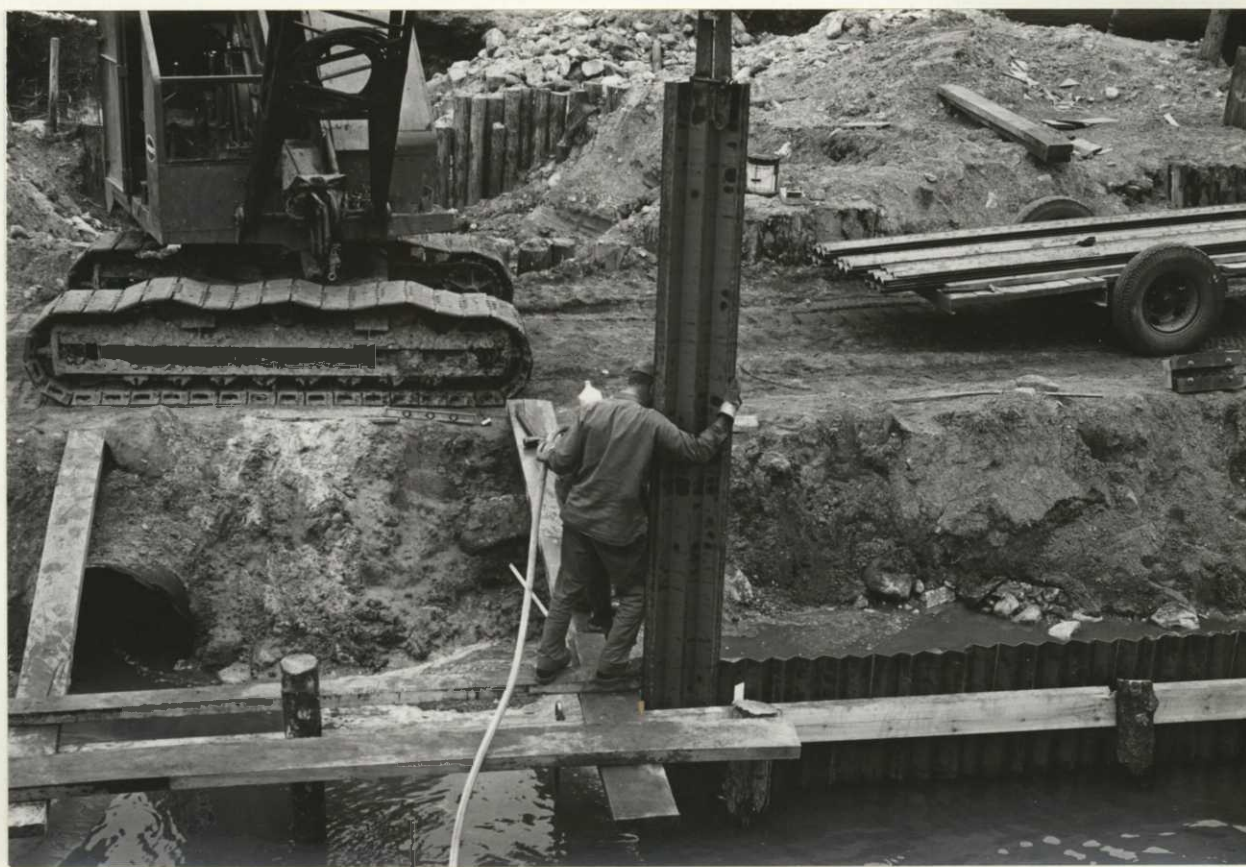


Fig. 17. New Assistant Refuge Manager,
Orlynn J. Halladay.

June 11, 1964

R 47-8

Sherwood

Fig. 18. New Maintenceman, Glen C.
Losey.

April 9, 1964

R 40-4

Sherwood



Fig. 19. View of new pumping island with record-fire extinguisher
box in center.

May 13, 1964

R 43-11

Suich



Fig. 20. Front view of the new gas and oil record box showing placement of easily reached fire extinguisher.

May 14, 1964

R 44-7

Suich

Fig. 21. Side view of the new gas and oil recording box. The writing surface shown conveniently swings out for use and back into the box for weather protection.

May 14, 1964

R 44-8

Suich



Fig. 22. Unloading new information shelter at the Driggs Picnic Area. (L. to R.) Orlich, Lawrence, Musselman and Schrock.

May 14, 1964

R 44-9

Suich

Fig. 23. Final work on placement of the information shelter at the new Driggs Picnic Area. Orlich (L) and Musselman.

May 14, 1964

R 44-12

Suich

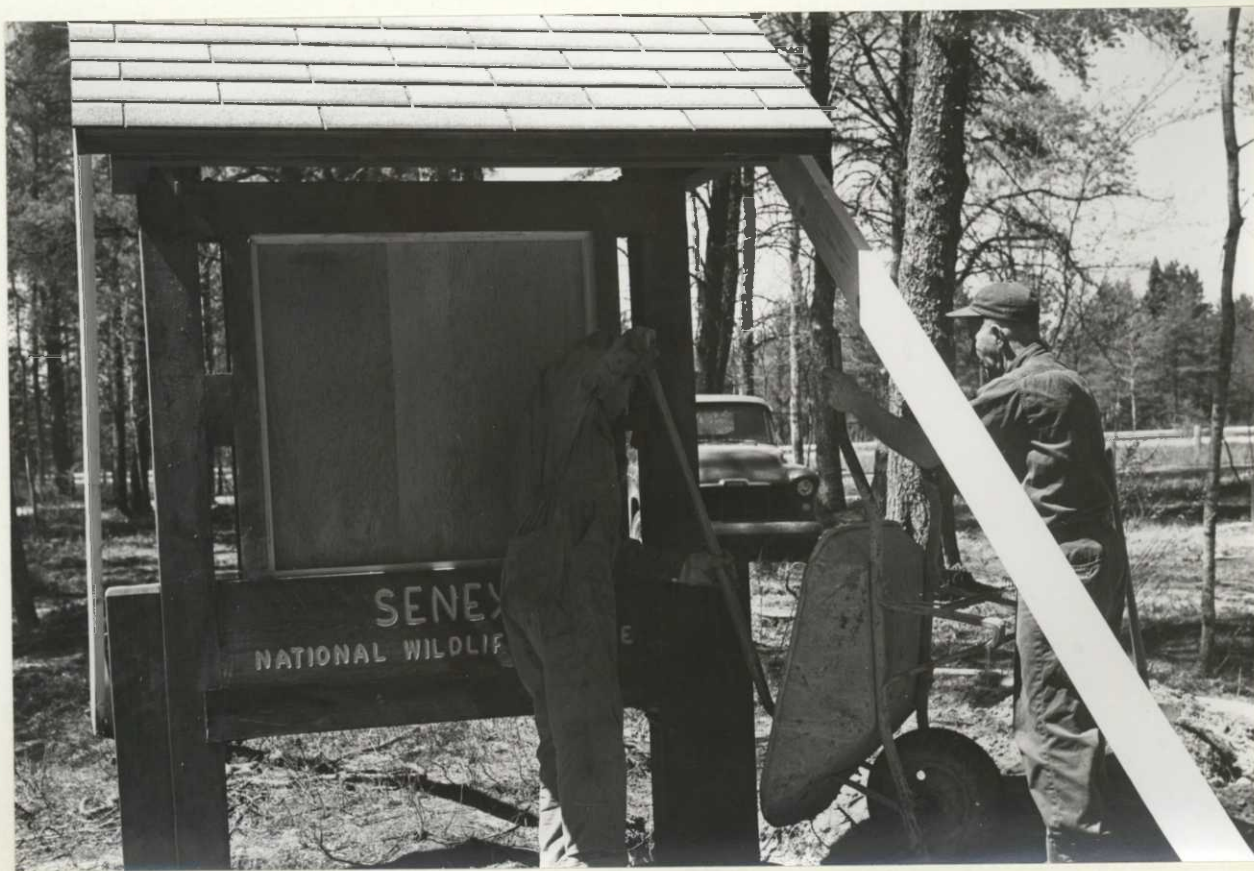


Fig. 24. Old Driggs River Bridge prior to construction of the new bridge, which would be located just to the left of this old bridge.

May 22, 1964

R 45-10

Suich



Fig. 25. Driving first steel piling at the Pine Creek
Bridge site.

May 22, 1964

R 45-9

Suich

Fig. 26. Steel piling in place on the Driggs River.

May 27, 1964

R 46-4

Suich



Fig. 27. Concrete operations at the Pine Creek Bridge.
Here, the piers are being poured.

July 9, 1964

R 50-10

Goeke

Fig. 28. Hurlbut Co. prestressed concrete beam being placed
at Pine Creek by United Crane Service. Both
Hurlbut and United Crane are out of Green Bay,
Wisconsin.

September 16, 1964

R 58-6

Hakala



Fig. 29. A United Crane Service truck-crane tumbled off the bridge when the operator swung one of the Hurlbut Co. prestressed concrete beams too far out and tipped the crane off balance. Operator luckily escaped serious injury.

September 19, 1964

R 60-5

Hakala

Fig. 30. Rail placement and final touch-up work on the Pine Creek Bridge.

October 27, 1964

R 66-6

Sherwood



Fig. 31. Completed Driggs River Bridge.

October 13, 1964

R 67-7

Halladay



Fig. 32. Excellent stand of Garry Oats on the Diversion
Field - peat land farming. John Hakala shown.

September 20, 1964

R 61-10

Mae Hakala

Fig. 33. Sample of Garry Oats from the Diversion Field.
A four foot stand.

September 3, 1964

R 54-9

Goeke

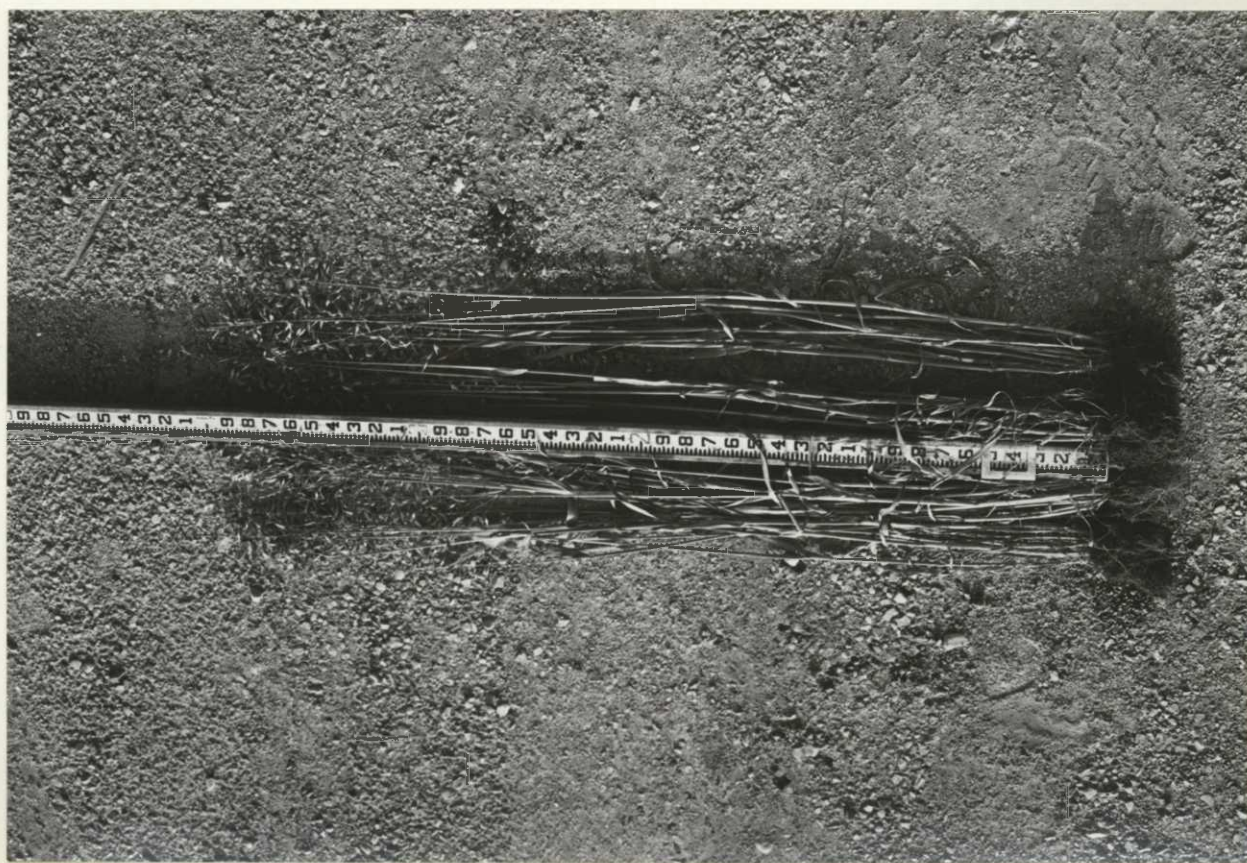


Fig. 34. Blasting with ammonium nitrate on the refuge was demonstrated by Robert Strong, Michigan Department of Conservation Biologist. Here Strong shows five pounds of the explosive in a plastic bag with primer cord protruding. Sherwood on right.

September 10, 1964

R 56-3

Hakala

Fig. 35. Ammonium nitrate charges in place showing primer cord running to each. Blasting cap is then attached between primer cord and wire running to blasting machine.

September 10, 1964

R 56-10

Hakala



Fig. 36. Bill Anderson sets off charge on I-1 Pool.
This was an 80 pound blast of a combination
of 16 five pound bags placed in three rows.
Charges were separated by about six feet.

September 10, 1964

R 57-8

Hakala

Fig. 37. Crater left by one of the five pound charges
was six feet across and about four feet deep.
This experimental blasting shows promise for
ditching and pothole work. Poor results,
however, were apparent for under-water blasts.

September 10, 1964

R 57-12

Hakala



Fig. 38. The Delta Creek fire started when lightning struck the large White Pine, passed down the trunk, along the root system and back up the dead Jack Pine (left foreground) making a "barber pole" of it, and casting smoldering chips in the process.

July 25, 1964

R 52-12

Sherwood



Fig. 39. Fire line along the Delta Creek fire. Burned area to the right.

July 25, 1964

R 52-9

Sherwood

Fig. 40. View of Michigan Department of Conservation pumper and pipes. This equipment had to be borrowed to help put out the peat fire three miles south of C-3 Pool.

August 14, 1964

R 53-6

Goeke



Fig. 41. Low-boy with 171 bales of hay for mulching purposes along dikes and trails.

August 18, 1964

R 53-8

Goeke

Fig. 42. Sub-headquarter's road from the east boundary to the gaye (.3 mile) was covered with tar and chips (seal-coating). Schoolcraft County Road Commission did the work.

August 20, 1964

R 53-9

Goeke

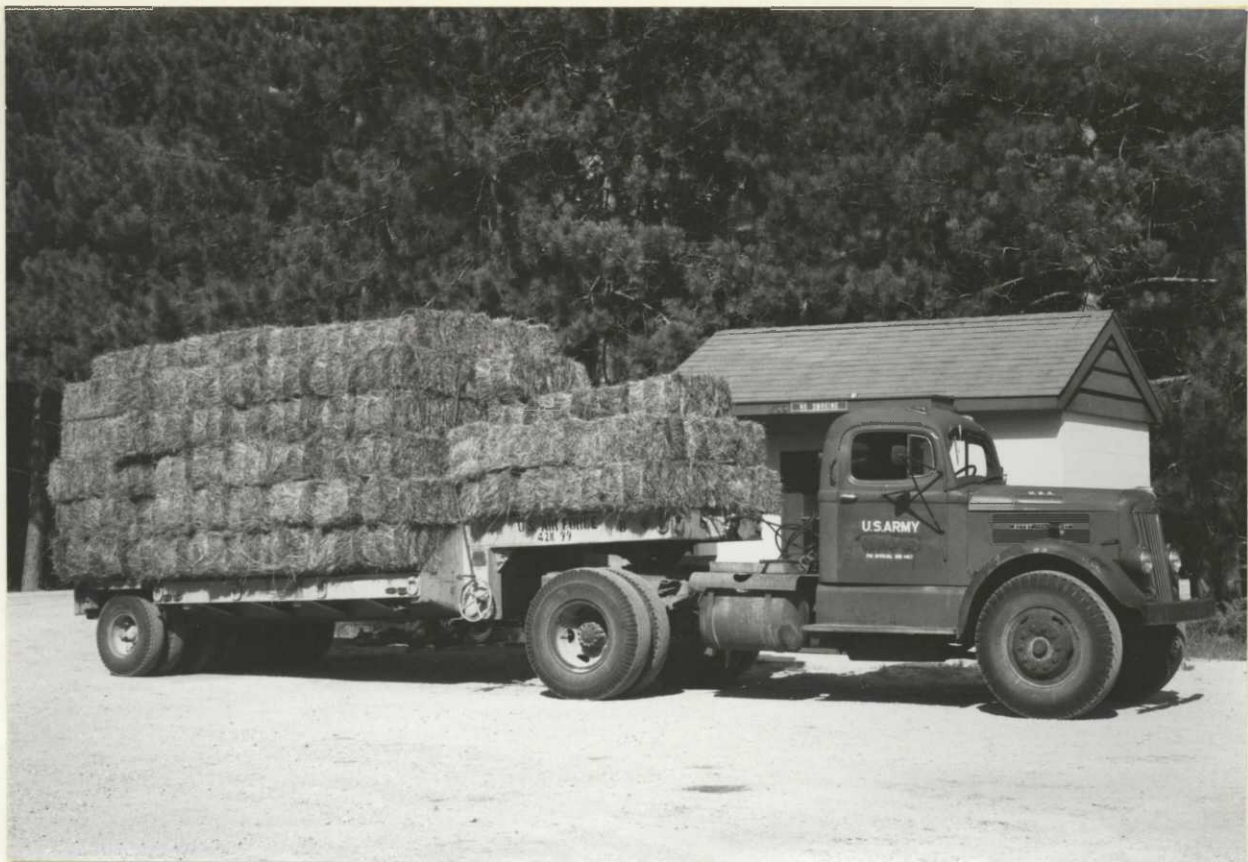


Fig. 43. Two new information signs were constructed and placed for deer hunters. The sign shown was located at the sub-headquarter's entrance. The signs proved to be a big help and percentage of infractions were reduced.

November 17, 1964

R 67-10

Sherwood

SENEY NATIONAL WILDLIFE REFUGE HUNTERS NOTICE



REFUGE HUNTING IS A PRIVILEGE.
ONLY CENTER-FIRE HIGH-POWERED RIFLES
PERMITTED ON REFUGE.
LEGAL GAME - DEER COYOTE FOX BEAR
ALL OTHER WILDLIFE IS PROTECTED.
ABSOLUTE SPEED LIMIT - 20 MPH.
ALL DIKES CLOSED TO MOTORIZED
VEHICLES.
POSITIVELY NO LITTERING. TAKE OUT
WHAT YOU BRING IN.
CAMPING PERMITTED ONLY WEST OF THE
DRIGGS RIVER. PERMIT REQUIRED.
BE SURE YOUR CAMPFIRE IS OUT!

Fig. 44. Remains of the unfortunate Bald Eagle that was killed when it's nesting tree on C-3 Pool went down in the wind storm of April 13. The mass of sticks in the background was the nest.

May 12, 1964

R 43-10

Sherwood



Fig. 45. Seney's returning geese traditionally make use
of the open water area below the I-F spillway.

March 25, 1964

R 38-12

Suich



Fig. 46. Typical Canada Goose nest at Seney.

May 7, 1964

R 43-6

Sherwood

Fig. 47. A number of Canada Geese still continue to use the lawns at headquarters for grazing and loafing. "Old Eyebrows", the patriarch of the flock is shown wearing collar 08 - his mate is 05.

June 5, 1964

R 47-4

Sherwood

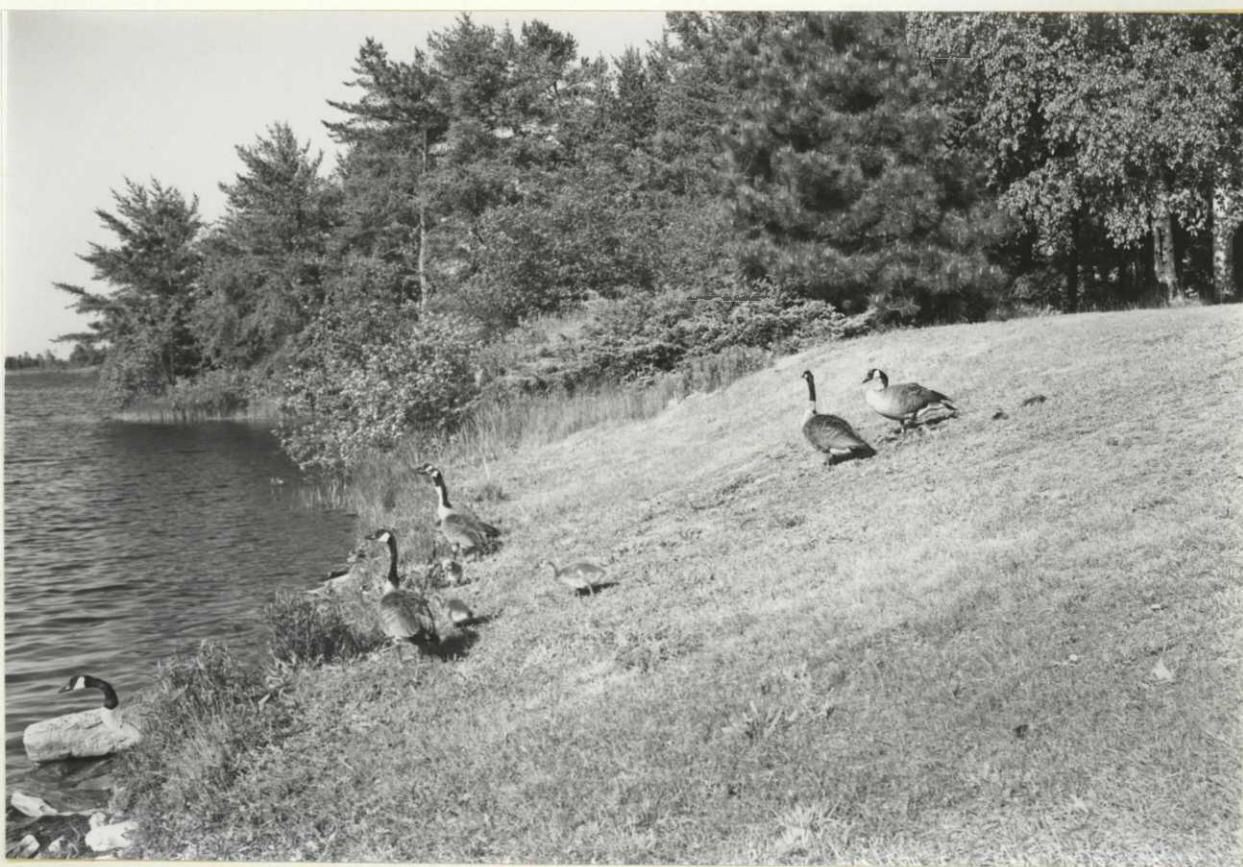


Fig. 48. New cannon net site on E-1 Pool nearly completed.

September 1, 1964

R 54-7

Goeke

Fig. 49. Cannons in place on the newly completed trap
site on E-1 Pool.

September 17, 1964

R 55-1

Sherwood

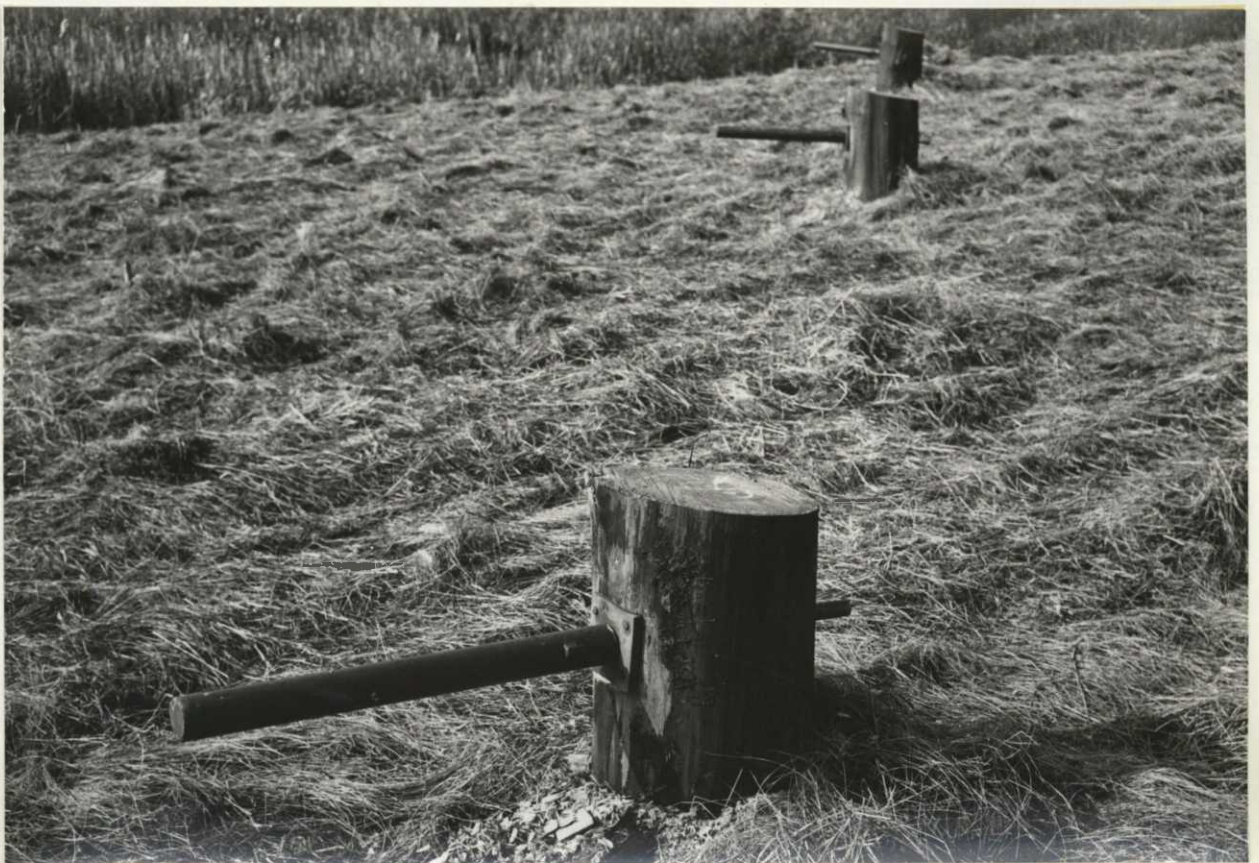


Fig. 50. New canoe rack on Dodge 4x4 pick-up.

March 25, 1964

R 39-4

Sherwood

Fig. 51. Part of the goose banding crew ready to push-off on C-3 Pool. Drive trap was put up near one of the distant islands. Note that life preservers were present - and they were used. (L. to R.) Halladay, Schrock and Losey.

July 2, 1964

R 48-9

Sherwood

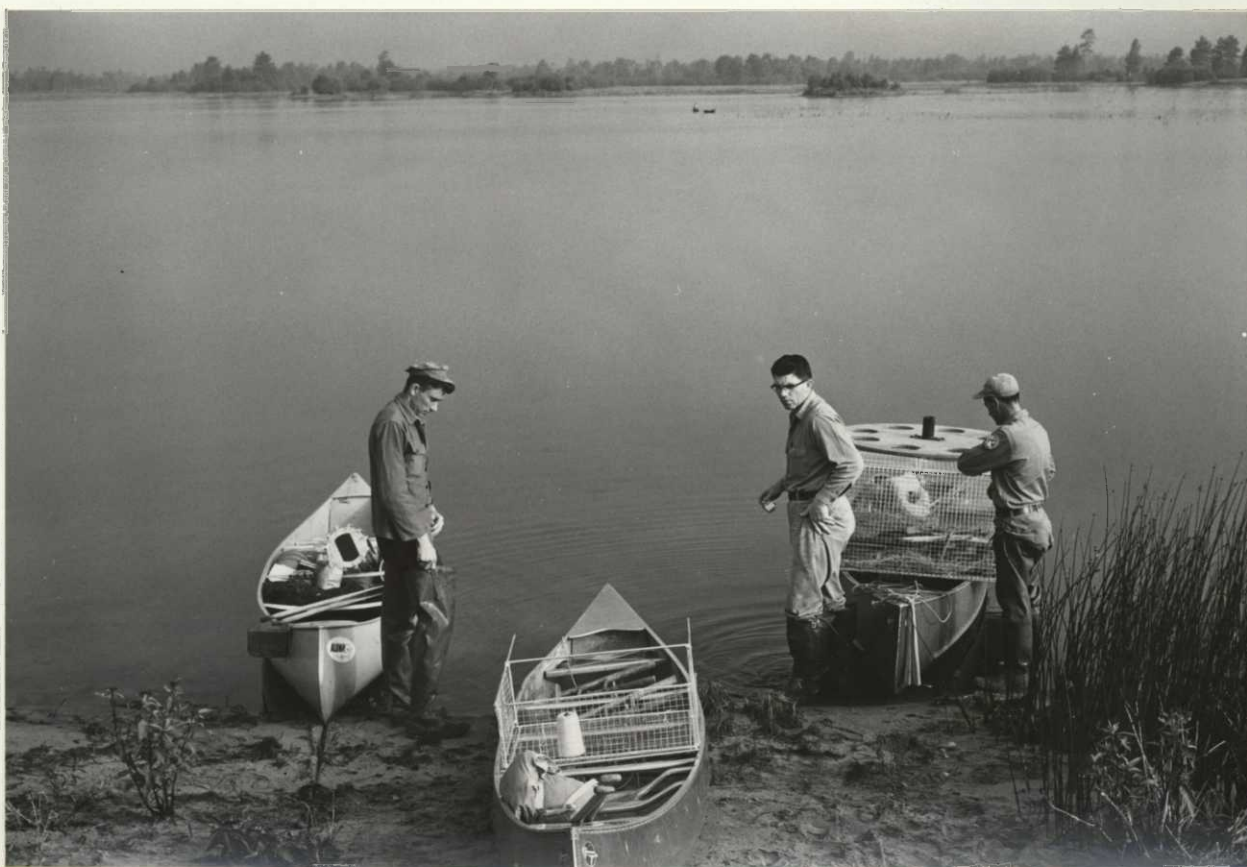


Fig. 52. Drive trap and holding cages on G-1 Pool. Five-hundred forty-one geese were trapped in 1964.

July 7, 1964

R 48-10

Sherwood

Fig. 53. Banding operations on G-1 Pool. (L. to R.) Mae Hakala, Halladay, Schrock, Sherwood and JoAnn Sherwood.

July 7, 1964

R 48-12

Goeke



Fig. 54. Collars have been placed on Seney geese for two years now. Here, a re-trap is shown with a collar that had been hit by shot, possibly saving the bird's life. Note the deer fly on the bird's head - they were particularly maddening to bander's and geese that day. Rintamaa holding goose.

July 9, 1964

R 50-6

Sherwood

Fig. 55. A catch of Canadas in the old walk-in trap behind residence 1. The trap has been there for many years and the wire was so rotten that four geese flew through it. Plans call for re-designing and re-building the trap in 1965.

October 16, 1964

R 64-2

Sherwood



Fig. 56. Refuge farm units received excellent use in 1964.
Here, several hundred Canada's graxe their way
across Sub-headquarters Field.

October 5, 1964

R 63-1

Sherwood



Fig. 57. A few Richardson's Geese passed through this fall. Compare the small head and bill of the Richardson's with that of one of our local Canada's

October 13, 1964

R 63-12

Sherwood

Fig. 58. Baited fields were a problem this fall. Here GMA Meyerding looks over a mowed oat field of Laverne Macaulay's. Note decoys in background. The field was closed to hunting for 10 days.

October 1, 1964

R 62-5

Hakala



Fig. 59. It was necessary to remove a number of predators following catastrophic nesting losses among the Canada Geese.

September 18, 1964

R 59-11

Hakala

Fig. 60. One of the nice pike removed from interior refuge pools by Michigan Department of Conservation personnel. This one and other legal sized pike were then released in the Show Pools for public fishing.

April 27, 1964

R 42-2

Sherwood



Borrowed for
use in annual
report, Jan
6/28/65

Fig. 61. Seney's new visitor center. The center opened briefly late in the summer, but will be officially opened and dedicated on May 30, 1965.

August 26, 1964

R 54-1

Goeke

Fig. 62. Marion Schrock shown constructing a counter in
the visitor center.

October 6, 1964

R 63-8

Halladay

Fig. 63. Completed information counter in the visitor
center.

October 20, 1964

R 64-10

Halladay



Fig. 64. Many thousands of visitors made use of the recreational opportunities at Seney. Here, Halladay talks with a group of school children prior to taking them on a guided tour through Unit I.

September 25, 1964

R 55-3

Sherwood

Fig. 65. School children starting on Seney's nature trail. The trail was heavily used again in 1964.

September 25, 1964

R 55-10

Sherwood



Fig. 66. A view of the Seney Refuge visitor center and parking lot from the tower at headquarters.

August 26, 1964

R 54-2

Goeke



Fig. 67. Scenic beauty of Seney Refuge following first snowfall of the season. Location is Upper F-1 Pool in front of the visitor center.

October 6, 1964

R 63-3

Halladay

